Now More XL/XE Pages!

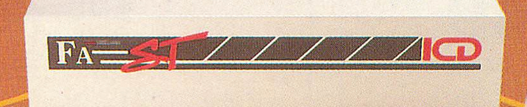
Antic®

The ATARI® Resource

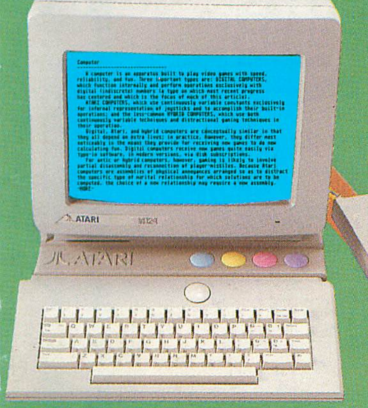
U.S.A. $3.95 CANADA $4.95
OCTOBER 1988
VOLUME 7, NUMBER 6

ATARI GRAND SLAM!

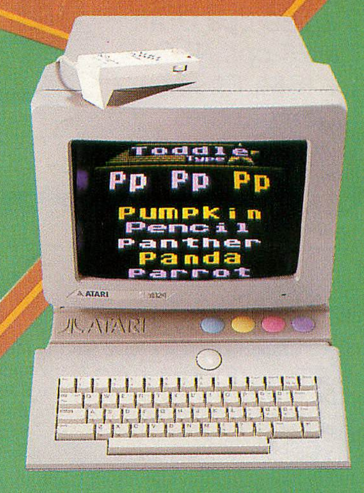
Four 8-Bit Breakthroughs



20Mb 8-Bit/ST Hard Disk



First 80-Column Graphics



Talking Disk Bonus



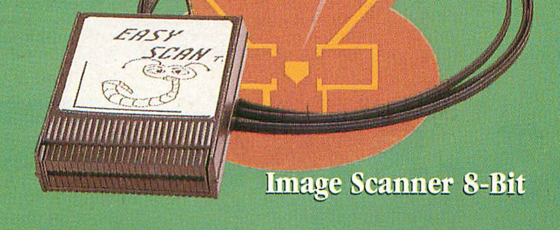
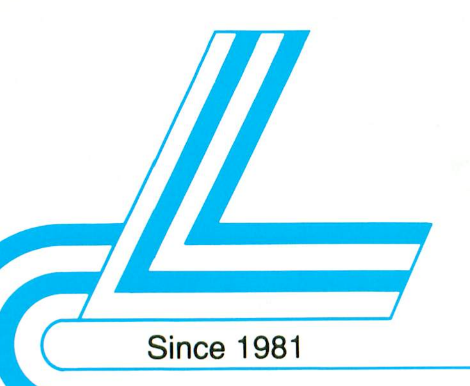


Image Scanner 8-Bit



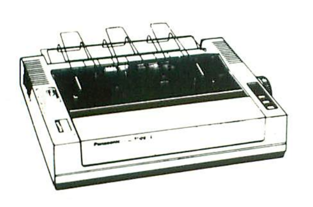
Lyco Computer

Marketing & Consultants

Great Value



The easier the better!



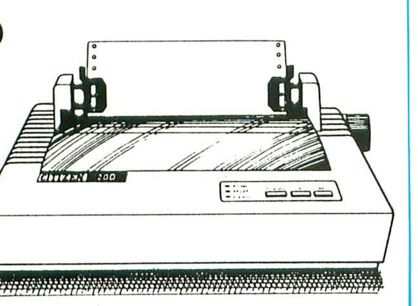
- 192 cps Draft
- 32 cps NLQ

$189.95

CITIZEN $149.95

120-D

- 120 cps Draft
- 25 cps NLQ
- IBM, Epson Compatible

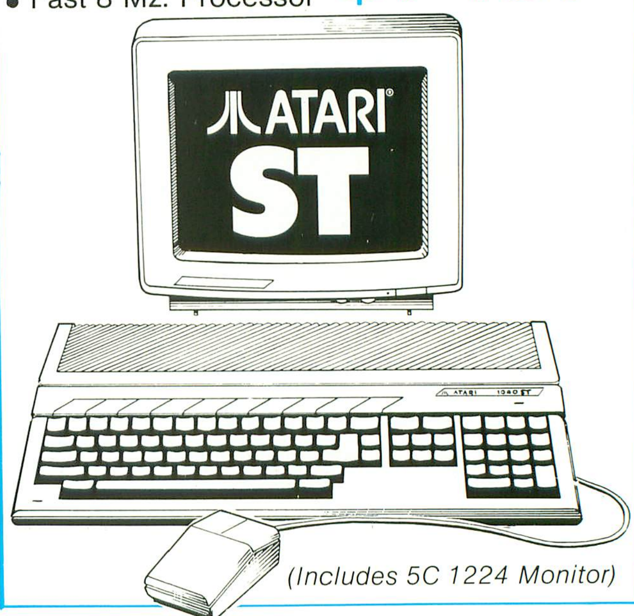


Great Performance Great Price

ATARI® 520ST-FM COLOR SYSTEM

- Built in 3.5" Drive
- 512 Color Monitor
- Fast 8 Mz. Processor

$749.95



(Includes 5C 1224 Monitor)

PRICE GUARANTEE

Since 1981, we have led the industry by continuing to offer the lowest national prices while providing quality service. Many companies have come and gone trying to imitate our quality and service. If by some oversight we do not have the lowest prices advertised on the products you desire, then we would appreciate the opportunity to rectify this oversight.

PRINTER PAPER

1000 Sheet Lazer	$16.95
1000 Mailing Labels	$8.95
200 Sheets OKI 20	$8.95
Transparent Labels	$4.95
Banner Paper 45' Roll	$10.95

TO ORDER, CALL TOLL-FREE: 1-800-233-8760
New PA Wats: 1-800-233-8760
Outside Continental US Call: **1-717-494-1030**

Hours: 9AM to 8PM, Mon. - Thurs.
9AM to 6PM, Friday — 10AM to 6PM, Saturday

For Customer Service, call 1-717-494-1670,
9AM to 5PM, Mon. - Fri.
Or write: Lyco Computer, Inc.
P.O. Box 5088, Jersey Shore, PA 17740

Don't Miss Our Other Value Packed Pages Located Elsewhere!

C.O.D. Risk-Free Policy: • full manufacturers' warranties • no sales tax outside PA • prices show 4% cash discount; add 4% for credit cards • APO, FPO, international: add $5 plus 3% for priority • 4-week clearance on personal checks • we check for credit card theft • sorry, compatibility not guaranteed • return authorization required • due to new product guarantee, return restrictions apply • price/availability subject to change • prepaid orders under $50 in Continental US, add $3.00

1-800-233-8760


James Capparell
Publisher
John Taggart
Associate Publisher

EDITORIAL
Nat Friedland
Editor
Charles Jackson
Technical and Online Editor
Gregg Pearlman
Assistant Editor
Heidi Brumbaugh
Programs Editor
Carolyn Cushman
Editorial Coordinator

ART
Matthew C. Mason
Director of Creative Services
Gregory Silva
Art Director
Jim Warner
Associate Art Director
Linda Tapscott
Production Manager
Violeta Diaz
Production Artist
Julianne Ososke
Collateral Printing Coordinator
Kate Murphy
Advertising Traffic Coordinator

CIRCULATION
Manny Sawit
Director
Amber Lewis
Subscription Coordinator
Dennis Swan
Distribution Coordinator

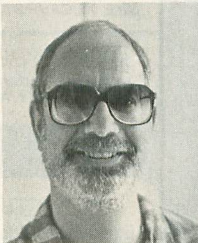
ADVERTISING
Phoebe Thompson
Western Region (408) 356-4994
Michael Mooney
MidWest Region (312) 679-1100
John Garland
Eastern Region (617) 749-5852
Gail McCall
Sales Coordinator (415) 957-0886

ANTIC PUBLISHING, INC.
James Capparell
President and Chairman of the Board
Donald F. Richard
Richard D. Capparella
Directors
Lee Isgur
Advisor to the Board
John Taggart
Associate Publisher
John Cady
Controller

GENERAL OFFICES
544 Second Street, San Francisco, CA 94107
Credit Card Subscription and Catalog Orders
(800) 234-7001 Visa or Mastercard Only
Dealer Sales (800) 234-7123

SUBSCRIPTION CUSTOMER SERVICE
(614) 383-3141
Antic, P.O. Box 1919, Marion, OH 43306

Antic Delivers —More 8-Bit Coverage



As this issue goes to press, the **Antic** editors are tabulating the results of the July 1988 reader survey. An in-depth analysis of the survey will appear next month in the November **Antic** along with highlights of the May 1988 Jack Tramiel letter-writing campaign—including Atari's responses. But even while the survey results are still being counted, some very striking trends have immediately become evident.

The survey appeared in the first of three staple-bound 64-page summer issues, by coincidence. Naturally the reduced format was very much on readers' minds. Many of you made it clear that you don't like thinner magazines, and you don't like stapled covers where you can't read information on the spine.

Okay, **Antic** listens! Since the majority clearly wants more pages and a return to our previous non-stapled covers, we're giving it to you—starting right here in this issue. Actually, these reductions were only an experiment for the summer months, when our numbers indicate that fewer persons are using their Ataris. But the people who sign checks around here weren't delighted with the thinner look either, so it's likely that your preferred **Antic** format is here to stay!

And while we're at it, we'll stop jumping story continuations across multiple pages too. This is something else that lots of you asked for.

ST ENTERTAINMENT ONLY

Antic wants to congratulate its ST-only sister magazine, START, for achieving monthly publication this autumn after starting out as a quarterly in 1986. Now that **Antic** no longer has a timeliness advantage over START, the editors and publishers are re-evaluating ST coverage within **Antic** in order to avoid duplication with the all-ST monthly.

Next month the **Antic's** ST section will be renamed the ST ENTERTAINMENT Resource and its primary goal will be to review all new ST games as soon as they are issued.

For 8-bit owners, this ST change means that you will now get a bonus of MORE 8-bit pages and MORE 8-bit disk space with each issue of Antic! That's because future issues of this magazine won't run ST type-in listings or ST disk bonuses. Also, The Catalog won't have ST software pages appearing in coming **Antic** issues.

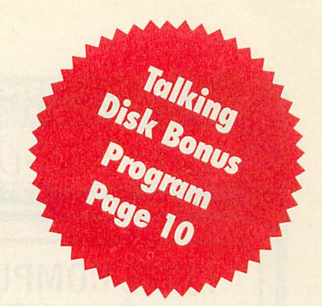
This should rightfully be considered a significant victory for **Antic** 8-bit readers, according to the overwhelming trends expressed in the July 1988 survey. And this magazine's publishers are open to going even further out for the 8-bit market in coming months. But what happens next is largely up to you—the Atari 8-bit user.

In the next few months there'll be a lot more breakthrough news, such as two GEOS-type graphic desktop interfaces coming for the Atari 8-bit. But what we need from you right now is your new Antic Disk subscription (or an upgrade of your non-disk subscription). For only $59.95, you get 12 double-sided disks of **Antic**-quality Atari 8-bit software—the best value ever offered here.

Nat Friedland

Nat Friedland
Editor, **Antic**



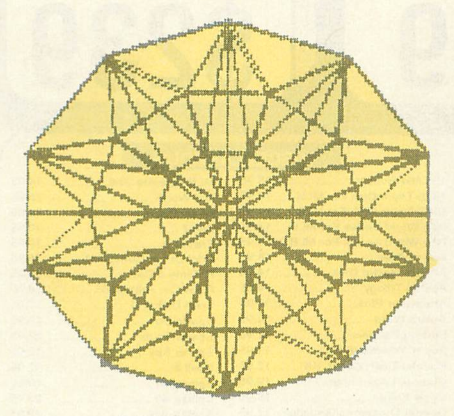


FEATURES

OCTOBER 1988, VOL. 7, NO. 6



Easy Scan. Page 42



Polyhedron Designer. Page 28

DEPARTMENTS

SOFTWARE LIBRARY TYPE-IN LISTINGS SECTION



ST RESOURCE









The Seven Skulls. Page 17

Cover Photography; Tony Carlson

Antic—The Atari Resource (ISSN 0745-2527) is published monthly by Antic Publishing. Editorial offices are located at 544 Second Street, San Francisco, CA 94107. ISSN 0745-2527. Second Class Postage paid at San Francisco, California and additional mailing offices. POSTMASTER: Send address change to **Antic**, The Atari Resource, P.O. Box 1919, Marion, OH 43306. Subscriptions: One year (12 issues) $28. Canada and Mexico add $8, other foreign add $12. Disk Edition (12 issues with disks) $59.95, all foreign add $25. (California residents add 6½% sales tax for disk subscriptions. Editorial submissions should include text and program listings on disk and paper. Submissions will be returned if stamped, self-addressed mailer is supplied. **Antic** assumes no responsibility for unsolicited editorial material.

Mon - Fri 9 am - 9 pm CST
Sat 11 am - 5 pm
800-558-0003

Your ST STORE that's as close as YOUR PHONE

SINCE 1982

ComputAbility

Mon - Fri 9 am - 9 pm CST
Sat 11 am - 5 pm
800-558-0003

ANT - 10 - 88

ST HOST CONTROLLER ADAPTOR
CALL FOR PRICES

PANASONIC

PANASONIC 1080i - II	169
PANASONIC 1091i - II	199
PANASONIC 1092i	329
PANASONIC 3131	309
PANASONIC 3151	489
PANASONIC 1524	579
PANASONIC 1592	419
PANASONIC 1595	479

★ SPECIAL ★
CASIO HT-700 MIDI KEYBOARD
$169.95

STAR MICRONICS

NX-1000	175
NX-1000 Rainbow	239
NX-2400 NEW 24 Pin	319
NX-15	309
ND-15	399
NR-15	479
NB-24/10	439
NB-24/15 (24 wire)	639

SUPRA 20 MEG HARD DRIVE
SCSII I/O Port ONLY $569 NEW

INDUS GTS 100
SF-314 Compatible Disk Drive
DOUBLE SIDED/ 1 MEGABYTE STORAGE
$189

SUPRA FD-10
10 Megabyte Removable
Only $829 NEW

★★★★★★★★★★★★★
Cyber VCR Compatible
Sony 8mm VideoEquipment
Call for the lowest prices

PC Ditto Package
Includes
• PC Ditto • MS DOS & GW Basic
• ST / PC 5 1/4" Disk Drive
$349

ST MODEM PACKAGE
• AVATEX 2400 MODEM
• ST MODEM CABLE
• FLASH TELECOM PACKAGE
$189

We Have What You Need For Your ST.

MICHTRON

Airball	25.95
Airball Construction Kit	17.95
Animator, The	25.95
BBS 2.0	49.95
Calendar	19.95
Cornerman	32.95
Fright Run	25.95
GFA Artist	49.95
GFA Basic 3.0	67.95
GFA Book	29.95
GFA Companion	32.95
GFA Compiler	38.95
GFA Draft	32.95
GFA Draft +	99.95
GFA Object	67.95
GFA Vector	32.95
Goldrunner	25.95
Goldrunner2	25.95
Goldrunner Scen Disks 1 Or 2	10.95
Hard Disk Backup	25.95
International Soccer	25.95
Juggler Utility	32.95
Jupiter Probe	17.95
Karate Kid II	25.95
Leatherneck	25.95
Leatherneck 4 Player Adaptor	13.95
M-Cache	25.95
M-Disk +	25.95
Major Motion	25.95
Make It Move	46.95
Master Cad	124.95
Match-point	25.95
Mighty Mail	32.95
Omega Run	25.95
Personal Money Mgr	32.95
Pinball Factory	25.95
Realtizer	150.95
Score Writer	25.95
Shuttle 2	25.95
Slaygon	25.95
Tanglewood	25.95
Tetra Quest	25.95
Time Bandits	25.95
Trimbase	64.95
Tune Up	32.95
Utility Plus	39.95

ST PRINT UTILITIES

Art Gallery 1 or 2	18.95
Award Maker	24.95
Certificate Maker	25.95
Fonts & Borders/P.M.	21.95
PM Interface	18.95
Print Shop	31.95
Printmaster Plus	24.95

ST TELECOMM

220 ST	32.95
QMI BBS ST	31.95
BBS Express	56.95
Deluxe Minicom	39.95
I.S Talk	33.95
Minicom	25.95
ST Talk Ver 2.0	CALL

DESK TOP PUBLISHING

Desk Top Publisher	89.95
Partner Fonts 1 or 2	19.95
Partner Forms	19.95
Publishing Partner	64.95
Publishing Partner Pro	127.95

ST LANGUAGES

Laser C	124.95
Lattice C	99.95
LDW Basic 2.0	54.95
Mark Williams C	114.95
MArk Williams CSD	CALL
Micro C shell	34.95
Modula II	67.95
Modula II Developer	104.95
MT C Shell	84.95
Personal Pascal 2.0	69.95

ST ADVENTURES

Alternate Reality	26.95
Alternate Reality 2 : The Dungeon	26.95
Apshai Trilogy	14.95
Autoduel	32.95
B-24	26.95
Balance of Power	32.95
Bard's Tale	33.95
Black Cauldron	25.95
Breech	25.95
Breech Scenario Disk	17.95
Colonial Conquest	25.95
Dark Castle	29.95
Defender of Crown	32.95
Deja Vu	32.95
Dungeonmaster	24.95
Empire	32.95
Guild of Thieves	29.95
Hero's of the Lance	26.95
Jinxter	25.95
Kings Quest 1,2 or 3	32.95
Leisure Suit Larry	25.95
Lords of Conquest	14.95
Moebius ST	38.95
Ogre	25.95
Phantasie 1,2 or 3	26.95
Police Quest	32.95
Portal	32.95
President Elect '88	18.95
Questron II	32.95
Rebel Universe	25.95
Rings of Zilfin	26.95
Roadwar 2000	26.95
Roadwar Europa	29.95
S.D.I.	32.95
Shadowgate	32.95
Shiloh	29.95
Sinbad	32.95
Space Quest 1 or 2	32.95
Stargilder	29.95
Stellar Crusade	36.95
Sundog	24.95
The Pawn	17.95
Thexdar	22.95
Ultima III or IV	25.95
Uninvited	32.95
Universe II	32.95
Wargame Construction Set	23.95
War Ship	38.95
Wizard's Crown	26.95

ST DATABASES

Data Manager ST	48.95
DB Man 4.0	159.95
Regent Base 1.1	79.95
Superbase Gem	94.95
Superbase Pro	184.95
The Informer	67.95

MUSIC

Adap	1549.95
CZ Android	61.95
CZ Patch	69.95
Digi-Drum	24.95
DX Android	104.95
Easy Score	67.95
EZ Score Plus	104.95
EZ Track Plus	39.95
Fingers	34.95
Gin Patch	104.95
Hyper Switch	19.95
Keyboard Contr Sequencer	149.95
Master Tracks Pro	219.95
Midi Maze	25.95
MouseTracks	84.95
Music Construction Set	33.95
Music Studio 88	38.95
Pro Drum	19.95
Pro Midi	19.95
Pro Sound	19.95
Pro Sound Designs	84.95
ST Replay	74.95
Sympte Trac	414.95
Sync Trac	269.95

ST EDUCATIONAL

1st Letters and Words	33.95
AB - Zoo	19.95
Adv. of Sinbad	31.95
Aesop Fables	31.95
All About America	36.95
Animal Kingdom	24.95
Decimal Dungeon	24.95
First Shapes	33.95
Fraction Action	24.95
Invasion	19.95
Kid Talk	33.95
Kinderama	24.95
Magical Myths	31.95
Math Talk	33.95
Math Talk Fractions	33.95
Math Wizard	24.95
Mavis Beacon Typing	32.95
Mother Goose	19.95
Read & Rhyme	24.95
Read-A-Rama	31.95
Space Math	25.95
Speller Bee	33.95

ADVANCED ORDERS

Arabian Nights	31.95
Ghostly Grammers	31.95
Lands of the Unicorn	21.95
Logic Master	31.95
Planetarium	44.95

ST BUSINESS

A-Calc Prime	39.95
Financial Plus	114.95
Isgur Portfolio	124.95
LDW Power	87.95
Logistix Jr.	57.95
Master Plan	59.95
Micro Lawyer	39.95
Neo Desk	18.95
Swiftcalc ST	48.95
Sylvia Porter	48.95
VIP Professional	99.95

EPYX

Art & Film Director	44.95
Battle Ship	17.95
Boulder Dash Kit	12.95
California Games	23.95
Champ Wrestling	12.95
Death Sword	12.95
Dive Bomber	28.95
Final Assult	28.95
Games : Summer Ed.	28.95
Games : Winter Ed.	28.95
Impossible Miss II	28.95
Metrocross	13.95
Sports- A- Roni	13.95
Street Cat	13.95
Street Soccer	28.95
Sub Battle Sim.	23.95
Super Cycle	12.95
Techno Cop	28.95
Temple Apshai Trilogy	12.95
Tower Toppler	28.95
Winter Games	12.95
World Games	12.95

ST ACCESSORIES

Anti-Glare Screen	19.95
Dustcovers	CALL
Flip'n' File II- Micro	19.95
3.5 Drive Clean Kit	16.95
6 Way Surge Protector	19.95
6 FT SF 354/314 Cable	19.95
Monitor Master	39.95
Mouse Master	35.95
Mouse Pad	8.95
Mouse House	6.95

ANTIC

3D Break-Thru	25.95
3D Developer's Disk	19.95
3D Font Package 1 or 2	17.95
3D Plotter & Printer Driver	17.95
A-Calc Prime	25.95
A-Chart	14.95
Architecural Design Disk	19.95
Base Two	39.95
CAD - 3D	19.95
Cartoon Design	19.95
C.O.L.R. Obj. Editor	9.95
Crystal	14.95
Cyber Control	39.95
Cyber Paint	44.95
Cyber Sculpt	CALL
Cyber Studio, The	64.95
Cyber VCR	49.95
Datamaps	17.95
Datmaps II	17.95
Flash 1.6	19.95
Future Design Disk	19.95
G.I.S.T.	22.95
Genesis	49.95
Human Design Disk	19.95
LCS Wanderer	25.95
Macro Mouse	22.95
Maps and Legends	22.95
Navigator, The	32.95
P.I.E.	19.95
PHA$ar	64.95
Quicktran	22.95
Red Alert	11.95
Shadow	19.95
Shoot the Moon	25.95
Spectrum 512	49.95
Starstruck	14.95
Stereo CAD 3-D	67.95
Stereotek 3D Glasses	149.95
Video Titling Design	19.95

ST GRAPHICS

1st Cadd	31.95
3-D Graphics	34.95
Advanced Art Studio	29.95
Aegis Animator	48.95
Art and Film Director	44.95
Athena II	67.95
Circuit Maker	49.95
Degas Elite	38.95
Drafix	114.95
Drafix Plotter	26.95
Draw Art Pro	49.95
Dtp Pub Lib/Easy Draw	64.95
Easy Tools	32.95
Font Pak 1 for Easy Draw	25.95
GFA Artist	49.95
Neochrome	34.95
Personal Draw Art I	19.95
Quantum Paint	29.95
Scan Art	32.95
ST Art Director	48.95
ST Sprite Factory	25.95
Super Charged EZ Draw	99.95
Technical Draw Art I	19.95

DISKETTES

3.5" SS/DD (10Pk)	12.95
3.5" DS/DD(10Pk)	15.95

Note: Buy diskettes at these low prices when added to any other order.

ST WORD PROCESSORS

1st Word-Plus	64.95
Fontz	22.95
Microsoft Write	89.95
Regent Word II	48.95
ST Becker Text ST	67.95
Tempus	32.95
Thunder	26.95
Word-Up	49.95
Word Perfect	219.95
Wordwriter ST	48.95

ST ARCADE GAMES

'86 Team K For MLBB	16.95
3-D Helicopter	32.95
Advanced D&D Heros of the Lance	26.95
Alien Fires	26.95
Arctic Fox	14.95
Arena	14.95
Awesome Arcade Act. Pack	33.95
Battledroidz	23.95
Bermuda Project	25.95
Bismark	26.95
Black Lamp	17.95
Block Buster	25.95
Boulder Dash Cons Kit	17.95
Bridge 5.0	22.95
Bubble Ghost	21.95
Capt. Blood	32.95
Card Sharks	CALL
Carrier Command	29.95
Centerfold Squares	CALL
Champ Baseball '86	25.95
CHAMP. WRESTLING	12.95
Chessmaster 2000	29.95
Cosmic Relief	23.95
Death Sword	12.95
Dive Bomber	22.95
European Scene Disk	17.95
F-15 Strike Eagle	25.95
Female Data Strip Poker	16.95
Final Assult	22.95
Flight Simulator II	33.95
Foundation Waste	24.95
Gato	24.95
Gauntlet	32.95
Gauntlet II	34.95
Gen Mgr/for MLB	19.95
GFL Football	25.95
Global Cmmdr	26.95
Gone Fishing	29.95
Gridiron Football	33.95
Guardians of Infinity	22.95
Gunship	32.95
Harrier Combat Simulater	32.95
Hunt for Red October	33.95
Ikari Warrior	25.95
IMPOSSIBLE MISSION II	24.95
Indoor Sports	25.95
International Soccer	25.95
Into the Eagle's Nest	25.95
Japan Scenery Disk	17.95
Karateka	22.95
Leader Board Duo Pak	17.95
Leviathon	10.95
Lock On	25.95
Master Ninja	26.95
Metrocross	12.95
Metropolis 2000 st	25.95
Micro League Baseball II	39.95
Mortville Manor	22.95
Murder on the Atlantic	25.95
Night on the Town	22.95
Oids	21.95
Outrun	28.95
Paper Boy	32.95
PinBallWizard	21.95
Platoon	25.95
Plutos	19.95
Q-Ball	19.95
Questron 2	32.95
Road Wars	20.95
Roadrunner	32.95
Rockford	20.95
RPV	24.95
Rubicom Alliance	20.95
Scrabble	26.95
Scruples	26.95
Sentry	29.95
Shiloh	29.95
Silent Service	25.95
Skyfox	14.95
Slaygon	25.95
Speed Buggy	25.95
Sports - A - Roni	13.95
Spy vs Spy 3	17.95
Speed Buggy	25.95
ST Comes Alive	19.95
ST Karate	22.95
ST Wars	24.95
Star Fleet 1	34.95
Star Fleet II	38.95
Star Glider II	29.95
Street Cats	13.95
Strip Poker	25.95
SUB BATTLE SIMULATOR	24.95
Super Bike Challenge	19.95
SUPER CYCLE	12.95
Super Star Hockey	32.95
Super Star Soccer	32.95
Temple of Doom	32.95
Test Drive	24.95
Three Stooges	32.95
Tonic Tile	25.95
Tracker	29.95
Trailblazer	32.95
Twilights Ransom	20.95
Two on Two Basketball	25.95
Typhoon Thomson	22.95
Universal Military Simulator	32.95
Uridium	25.95
Vampire's Empire	26.95
Vegas Gambler	21.95
Wargames Constuction Kit	22.95
Warship	38.95
Western Europe Scen. Disk	17.95
Winter Challenge	10.95
WINTER GAMES	12.95
Wiz ball	14.95
WORLD GAMES	12.95
WWF Micro Wrestling	39.95
Xevious	19.95

ST UTILITIES

Back Pak	64.95
Desk Cart	72.95
Electro Calendar	35.95
Fast	31.95
Flashback	79.95
HD Sentry	32.95
IB Copy	21.95
IB Disk Utility	21.95
Labelmaster Elite	27.95
M.S. Dos&G.W. Basic(IBM 5.25)	79.95
Micro Cookbook	32.95
Partner ST	32.95
PC Ditto 3.0	69.95
Revolver	49.95
Smooth Talker	33.95
St Doctor	24.95
Time Link	33.95
Turbo ST	36.95
Video Wizard	39.95

TAITO

Alcon	25.95
Arkanoid	22.95
Bubble Bauble	25.95
Gladiator	CALL
Operation Wolf	CALL
Kix	CALL
Rastan	CALL
Benegade	CALL
Skyshark	CALL

ABACUS

Abacus Books	CALL
Assempro	39.95
Becker Text	64.95
Change Electra Spell	14.95
Chart Pak St	32.95
Datatrieve	32.95
Forth MT.	32.95
Paintpro	32.95
Powerplan	49.95
Textpro	32.95

No surcharge for MasterCard
To Order Call Free
800-558-0003

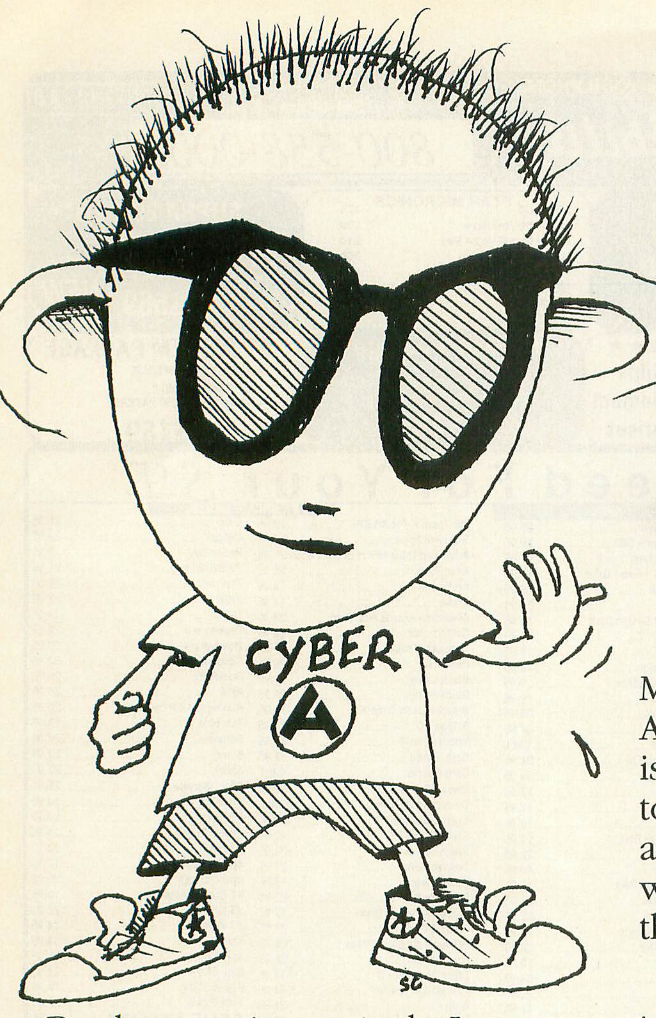
MasterCard
P.O. BOX 17882,MILWAUKEE,WI 53217
ORDER LINES OPEN
Mon-Fri 9am-9pm CST Sat 11am-5pm

SINCE 1982
ComputAbility

VISA
No surcharge for Visa
Telex Number 9102406440
(ANSERBACK = COMPUT MILW UO)

For Technical Info, Order Inquiries, or for Wisc. Orders
414-357-8181

ORDERING INFORMATION: Please specify system. For fast delivery send cashier's check or money order. Personal and company checks allow 14 business days to clear. School P.O.'s welcome. **C.O.D. charges are $3.00.** In Continental USA include $3.00 for software orders 5% shipping for hardware minimum $5.00. MasterCard and Visa orders please include card #, expiration date and signature. WI residents please include 5% sales tax. HI, AK, FPO, APO, Puerto Rico and Canadian orders, please add 6% shipping, **Minimum $6.00.** All other **foreign orders add 15% shipping, minimum $15.00.** All order shipped outside the Continental U.S.A are shipped first class insured U.S. mail. If foreign shipping charrges exceed the minimum amount, you will be charged the additional amount to get your package to you quickly and safely. All goods are new and include factory warranty. Due to our low prices all sales are final. All defective returns must have a return authorization number. Please call (414)357-8181 to obtain an RA# or your return will not be accepted Prices and availability subject to change without notice.



"Pssst—c'mere!"

My sources tell me that a new catalog from Antic Software will appear in the November issue of START Magazine. But, I can get a copy to ya *now!* That's right, the November catalog available today! Imagine, the best Atari software products at your fingertips! Just fill out the coupon below and it's yours!

But hey, *wait* a second. I got a special offer for ya. It's so hot ya gotta call our toll free order line to get the scoop.

800-234-7001

Why am I doin' this? Because us Atari users gotta stick together!



Antic Software Inc.
544 Second Street
San Francisco, CA 94107

Pssst... Hey dealers, it's your turn, so listen up!

Antic Software just got a new 800 line for retailers. Yeah, now you can call us and it won't cost you a thing! What's that? You don't believe it? Give us a call and see for yourself. And while you're on the line, ask about our hot deal for retailers.

800-234-7123

YES, I want the new Antic Software catalog. Send it to:

Name ____________________

Address ____________________

City ____________ State ____ Zip ____

Phone (   ) ____________________

The computer(s) I own:

☐ Atari 8-bit ☐ Atari ST ☐ Other ________

The computer magazine(s) I read:

☐ Antic ☐ STart ☐ Other ________

Mail to: Antic Software Catalog, 544 Second Street
San Francisco, CA 94107

MK8A

TRAMIEL WRITE-IN WINS

This is just to let you know of the satisfactory results of **Antic's** write-in campaign to Atari Chairman Jack Tramiel. Less than a month after I wrote to Tramiel of my desire for more dealers in my area, Atari Canada has contacted at least one of the dealers on my list. This dealer is now undergoing the application process to pick up the ST and PC lines.

Mike Loader
Westwin, Manitoba
Canada

NO DOS 3

I've been having problems with Sssnake! by Chet Walters (**Antic**, October 1986). Even though I retyped the lines and checked it very carefully with TYPO II, I still can't get it to work. I have an 800XL and a 1050 disk drive, and the disk was formatted with DOS 3.

Douglas McGhee
Honolulu, HI

*The Magic Words in your letter are "DOS 3." Every few months **Antic** finds itself repeating for newcomers the warning that DOS 3 has several problems, among which are that it uses more memory than DOS 2.0S or 2.5, and it also uses different memory locations. It's even incompatible with DOS 2 and 2.5, using an entirely different disk structure. **Antic** recommends using either DOS 2 or 2.5. You'll find DOS 2 on each month's Antic Disk—it's in the DOS.SYS and DUP.SYS files.*—ANTIC ED

NO BARNYARD BUGS

I am the author of Atari's Barnyard Blaster XE cartridge, reviewed in **Antic**, June 1988. I think that reviewer David Plotkin may have had a defective cartridge or XE Game System, because I am positive that the "rectangle or garbage" he mentions is not a bug in the program. Thank you, though, for the good review of my work. Watch for my next one, Crime Buster.

James Zalewski
Hamtramck, MI

TALKING TYPEWRITER

I was excited to read about the *Talking Typewriter* program (**Antic**, January 1987). I bought all the parts, thinking I could tackle the project on my own. I couldn't.

Is there anyone out there who can read schematics and solder for a reasonable price? If so, I could send him or her the parts. I really want the Talking Typewriter.

Jonathan Beich
RR1, Box 103
Sykeston, ND

*Good luck. Also, **Antic** is working on a no-hardware conversion of* Talking Typewriter *created with the Covox Voice Master Junior just like this month's* Toddle Type *Super Disk Bonus*—ANTIC ED

MODEM HANDLER?

I'd like to know how to communicate with the Atari XM301 and 1030 modems: I'd like to set things like auto-answer, pickup/hand-up, loop back test, etc. I'm trying to write a handler for the XM301 to make it Hayes-compatible.

Patrick Presley
Lumberton, TX

You might be able to find what you need in Russ Wetmore's article, Unleashing the 1030 Modem *(**Antic**, August 1985).*—ANTIC ED

PRAISE ATARI FOLKS

I've been an electronics technician for 18 years. I started with an Atari 800 when it cost $800 for the computer and another $450 for the drive. Later I bought a 130XE and loved it. And about a year ago I bought my 1040ST. I'm glad I stayed with Atari.

One thing I've liked about the Atari is the people. I've found nice pen pals in other countries, mostly Norway and Germany, and I receive some magazines from England. The very first computer magazine I bought for my 800 was **Antic**—and it's been an important part of computing ever since.

Mike De Barbieris
Kenner, LA

ATARIANS UNITE!

I'd been depressed about the lack of software for my 800XL and was thinking about saving all my software money until I could buy a "popular" computer. Then I saw the July 1988 **Antic** with two important items—the news of the success of the write-in campaign to get Newsroom ported to the 8-bit Atari, and the launching of the new Software Wanted section of the I/O Board. Now the sky is bright, the birds are singing, I'm smiling and my wife's mumbling about having me fitted for an "I Love Me" suit.

We'll get results if we all write to the listed manufactuers and let them know how many potential customers they have and that there really is an Atari 8-bit market. Which is cheaper: a stamp and a letter, or buying a whole new computer system while your Atari 8-bit just gathers dust?

If this succeeds, let's not stop with the new software. How about some of the older games and productivity software, no longer made, but still copyrighted?

Robert Smith
Reedsport, OR

*The editors couldn't agree more and **Antic** is steadily expanding its direct involvement in helping readers campaign successfully for more 8-bit software. See this issue's editorial for the next battlefront.*—ANTIC ED

BACK UP A SEC

Epson FX-86e printer users might be interested in an undocumented control code—ESC j—which backs up the tractor one line. Word processor programs that print in multi-column format use it to return to the head of the page. This code has been confirmed by Epson America, but they do not recommend using it because it may cause paper-feeding problems under certain conditions.

Ken Stoops
Anchorage, AK

***Antic** doesn't have the printer mentioned above and is unable to test this tip. Try it at your own risk*—ANTIC ED

WANTS PAGE 6

Okay, I can't stand it anymore. I've been an **Antic** buyer/subscriber for several years and I will continue to be. But there seems to be another magazine out there that a lot of us will want to have as well.

Since you keep reprinting material from Page 6, why don't you tell us all where we can find it. It's probably easy to come by in the "other" London, but I can't find it here.

Paul Harris
London, Ontario,
Canada

Page 6 is at P.O. Box 54, Stafford, ST16 1DR, England. Telephone: 0785 213928. —ANTIC ED

TRAK-MOUSE

Here's a tip for 8-bit Missile Command players who own either an ST mouse or an Atari Trak-ball controller. On the bottom left side of the trak-ball is a switch labeled Trak-ball and Joystick. Move the stick to the Trak-ball position.

After you load Missile Command and turn on the computer, press [CONTROL] [T]. The status line at the top of the screen changes from STICK to TBALL. Now you can plug in your Trak-ball or mouse—and you'll find that either one works better than the joystick.

Brent Fisher
Jackson, MI

On the XE Game System, it looks as if you can just plug in the mouse and fire away.—ANTIC ED

8-BITTER SEEKS SAME

Since relocating to this small upstate New York community, I have been unable to find any Atari users groups. My only consolation so far is that I can continue buying **Antic** at a bookstore about 10 miles from home. Since others are buying the magazine, there must be more of us avid 8-bitters nearby. Please contact me:

John Palmer
P.O. Box 42
Meridale, NY 13806

CWAUG THANKS

CWAUG (Central Wisconsin Atari Users Group) would sincerely like to thank **Antic** for replying to an Atari user trying to find a group in this area. We now have another knowledgeable Atarian member.

Thomas Ptak
President, CWAUG
Marshfield, WI

FORTUNE 500

The April 1988 issue of Fortune Magazine published its annual list of the 500 largest corporations in the United States. It was good to see Atari listed. Ranked at 484, Atari had sales of $493.3 million and a profit of $57.4 million (11.6% of sales).

While Atari ranked as the smallest Fortune 500 corporation in the computer industry, its 1987 growth over 1986 was 91.1%, the third fastest. Only Sun Microsystems, at 155.8%, and Compaq Computers, at 95.8%, came in ahead of Atari. Not only are Atari's sales growing, but so are its profits. When ranked in terms of "profit as % of sales," Atari came in third again at 11.6%. This time Atari was bested by Cray Research, at 21.4%, and Digital Equipment, at 12.1%.

I've always known that Atari's products were first rate. Now I know that Atari is a first-rate business, and rightfully so. Atari's performance as been great in this competitive industry.

Henry Jennings
Detroit, MI

HELP

POWER PAD

We are desperate to find the Power Pad, an extra-large graphics tablet for the 8-bit Atari. Chalk Board Inc., the maker, is now apparently out of business. If any of your readers have Power Pad sources, please write to the I/O Board.

Greg Brown, President
Nittany Atari PC
Organization

DEFAULTWRITER PLUS

DefaultWriter Plus (**Antic**, July 1988, page 60) runs as published. The instructions are complete, but step 4 was mislabeled as Step 5.

KING KENO

The *magazine* instructions for the *King Keno* Super Disk Bonus (July 1988, page 7) didn't mention that after copying KENO.EXE to another disk, you must rename it AUTORUN.SYS before it will automatically load and run. The instructions on the *disk* are complete.

BIG LETTERS

Big Letters (March 1988, page 40) runs as published. The program take-apart refers to an older version of the program.

The take-apart should read:

Line 50 executes the introductory display routine starting at line 1330, where mode 1 or 2 is selected, then executes the appropriate editing window starting at line 530.

Lines 130-520 accept and process all keyboard activity and displays the editing windows.

Lines 530-540 initialize our strings.

Lines 550-880 set up editing windows.

Lines 1180-1182 change all double quote characters to inverse-video.

Lines 1185-1210 append all text in the editing window to the end of the program in the form of program statements.

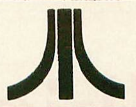
Lines 1290-1470 contain the introductory display routine.

***Antic** welcomes your feedback, but we regret that the large volume of mail makes it impossible for the Editors to reply to everyone. Although we do respond to as much reader correspondence as time permits, our highest priority must be to publish I/O answers to questions that are meaningful to a substantial number of readers.*

Send letters to: Antic I/O Board, 544 Second Street, San Francisco, CA 94107.

B&C ComputerVisions

3257 Kifer Road
Santa Clara, CA 95051
(408) 749-1003



STORE HOURS
TUE - FRI 10am - 6pm
SAT - 10am - 5pm
CLOSED SUN - MON

NEW!! *1050 SUPER ARCHIVER CHIP* $69.95

8-BIT INTEGRATED CIRCUITS

$3.50 EACH OR 3.00 IN QTY OF 10

ASSEN REV A	800 CPU 6502	RAM 6810
BASIC REV A	810 ROM C	POKEY
MPU 6507	800 ANTIC	PIA 6502
PIA 6532	OS ROMS (499B-599B)	

$4.50 EACH OR 4.00 IN QTY OF 10

1771 FDC	XL CPU 14806	GTIA
1050 ROM	XL/XE MMU	XL DELAY

$12.00 EACH

ASSEM REV B
XE GATE ARRAY
XL ANTIC
VCS TIA 444
BASIC REV C
850 ROM B
FREDDIE
XL/XE OS

NEW PRINTED CIRCUIT BOARDS WITH PARTS

800 MAIN WITH CHIPS	10.00	800 10K O/S	10.00
800 16K RAM	10.00	800 POWER	5.00
810 SIDE WITH D/S	15.00	800 CPU W/GTIA	10.00
810 ANALOG	10.00	810 POWER	15.00

JOYSTICKS

ATARI SPACE AGE	14.95	WICO 3-WAY	29.95
ATARI STANDARD (2)	12.00	WICO BAT HNDL	22.00
ATARI TRAK BALL	25.00	NUMERIC KEYPAD	19.95
EPYX 500 JOYSTICK	19.95	ST MOUSE	45.00

MISCELLANEOUS

400/800 POWER PACK	10.00	800 KEYBOARD	40.00
800/810 POWER PACK	15.00	800XL KEYBOARD	25.00
KLM 400/800 POWER PACK	5.00	130XE KEYBOARD	35.00
1030 POWER PACK	10.00	520ST KEYBOARD	75.00
800XL/XE POWER PACK	20.00	1040ST KEYBORD	85.00
2600 POWER PACK	5.00	314/354 POWER	35.00
520ST POWER PACK	50.00	1040 POWER PCB	75.00

DISK DRIVES

ATARI 810	140.00	(130.00)
ATARI 810 on Plate	100.00	(90.00)
ATARI 810 W/HAP	220.00	(210.00)
B&C 810	140.00	(120.00)

ATARI XF551
199.95
INDUS GT
225.00

PRICES IN BRACKETS DO NOT INCLUDE I/O OR POWER PACK

DE RE ATARI
$10.00

FIELD SERVICE MANUALS

ATARI	400/800, 810	25.00 EACH
ATARI	800XL, 850, 1025, 1050	20.00 EACH
SAMS	800, 800XL, 130XE, 1050	19.95 EACH
SAMS	520ST	35.00

RUN MAC SOFTWARE ON YOUR ST

MAGIC SAC	119.95
TRANSLATOR	279.95
MAC ROMS	39.95
PRT DRIVERS/FINDER	44.95

MAC
ROMS

COMPUTERS & INTERFACE

ATARI 800	100.00	MPP-1150 INTERFACE	54.95
ATARI 800XL	119.95	MPP-1151 INTERFACE	74.95
ATARI 130XE	149.95	ATARI 850	125.00

DIAGNOSTICS

1050 DIAG. DISK	20.00	810/1050 DIAG. CART	25.00
SALT 800XL CART	25.00	SALT 400/800 CART	25.00
5-1/4" ALIGNMENT	40.00	3-1/2" SS ALIGNMENT	50.00

HAPPY ENHANCEMENT VER. 7.1
810 OR 1050 - $99.95

ST INTEGRATED CIRCUITS

DISK CONTROLLER WD1772	25.00	DMA CONTROLLER	26.00
PHOTO COUPLER PC900	2.95	MMU	28.00
YAMAHA SOUND CHIP	10.00	VIDEO SHIFTER	26.00
6850 ACIA	3.95	GLUE CHIP	28.00
68000-8 CPU	27.00	68901 MPF	16.00
KEYBOARD CHIP	15.00		

ATARI XE GAME MACHINE $139.95

INCLUDES MISSILE COMMAND, FLIGHT SIMULATOR II, BUG HUNT, LIGHT GUN, JOYSTICK, BASIC, AND 64K OF MEMORY WITH A REMOVEABLE KEYBOARD. ADD A DISK DRIVE AND PRINTER FOR A COMPLETE HOME COMPUTER SYSTEM!

WE CARRY A FULL LINE OF CARTRIDGES FOR THE XE GAME MACHINE.

SUPER SPECIALS

RECONDITIONED ATARI MERCHANDISE

All merchandise has been tested and reconditioned and is in like-new condition except where noted. 30 day warranty.

ATARI TRAK BALL $9.95
SPICE UP THE ACTION IN YOUR ARCADE GAMES!

ATARI SPACE AGE JOYSTICK $5.00

1020 COLOR PLOTTER/PRINTER $29.95
40 Columns wide
Includes paper and color pen set

600XL (64K) $59.95
Upgraded to run newer 64K software - includes Basic & power supply

ATARI BOOKKEEPER
$14.95 - NO BOX
($19.95 WITH RECON KEYPAD)
$24.95 - IN BOX
(29.95 WITH RECON KEYPAD)

400 (16K) COMPUTER $29.95
48K UPGRADE KIT
$25.00

1030 MODEM WITH EXPRESS! $29.95
GET ONLINE TODAY

800 (48K) COMPUTER $79.95
INCL. BASIC CART & MANUAL

NUMERIC KEYPAD $7.95
INCL HANDLER DISK USE WITH BASIC & BOOKKEEPER

DISKETTES
AS LOW AS 20 CENTS
10 FOR $4.00
100 FOR $29.95
1000 FOR $200
MOST ARE UNNOTCHED WITH OLD SOFTWARE

SHIPPING INFORMATION - Prices do not include shipping and handling. Add $5.00 for small items ($8.00 Min. for Canada). Add $8.00 for disk drive. Calif. res. include 7% sales tax. Mastercard and Visa accepted if your telephone is listed in your local phone directory. Orders may be pre-paid with money order, cashier check, or personal check. Personal checks are held for three weeks before order is processed. C.O.D orders are shipped via UPS and must be paid with cash, cashier check or money order. International and APO orders must be pre-paid with cashier check or money order. $20.00 minimum on all orders. All sales are final - no refunds - prices are subject to change. Phone orders accepted TUESDAY THROUGH FRIDAY from 10:00 am to 6:00 pm PST.

We carry a complete line of ATARI products and have a large public domain library. Write or call for free catalogue. (408) 749-1003 TUE - FRI 10AM - 6 PM

PRICES SUBJECT TO CHANGE WITHOUT NOTICE - ALL SALES ARE FINAL

By MATTHEW RATCLIFF



Talking Toddle Type

Software that speaks—no extra equipment required!

(We have a true 8-bit technical breakthrough for this month's Super Disk Bonus—Antic's first talking program that you can use without any extra hardware or software. And now that Contributing Editor Matthew Ratcliff has worked out the tricky techniques for programming stand-alone talking disk files with the $39.95 Covox Voice Master Junior, you can expect to see a talking Disk Bonus or a tutorial about speech programming in many future issues. —ANTIC ED)

I have dozens of video games for my Atari 8-bit computer system. However, my four-year-old son Nathan's favorite game is to type on Daddy's computer. He will turn on the computer in Atari BASIC and begin tapping away at the keys. So I finally decided to create a special typing program just for little kids who like nothing better than typing on the computer.

When you turn the program on, the title screen is immediately displayed. If nothing is typed within 30 seconds, a random letter of the alphabet "plays" for you. When your toddler taps a letter key, that letter is displayed on an animated screen. The letters might scroll left and right, sparkle, or flash a rainbow—you'll see lots of different effects throughout the alphabet.

After the letter is animated in both upper and lower case, several words beginning with this letter are presented. If junior gets tired and just sits back and relaxes, the program will continue to select letters randomly and animate them once every 30 seconds or so (as long as no keys are pressed).

The bright, flashy colors, huge letters and constant animation will help keep your children fascinated for hours on end. My son, after playing with Toddle Type for only a few days, now recognizes every letter of the alphabet and can find and type any one of them upon request. My two-year-old son Charles is now starting to learn his letters with it as well.

Even before I added some 30 speech files, Toddle Type turned out to be an assembly language program nearly 10K long. A type-in listing of the BASIC translation of Toddle Type would run about a dozen pages with nothing but data statement numbers.

For assembly language programmers, by the time you read this, the full assembler source code for Talking Toddle Type should be available for downloading from the ANTIC ONLINE Software Shelf. At about 128K, the speech code is so big that it won't even fit on one single-density disk.



TALKING TODDLE TYPE

To use Talking Toddle Type, copy TODDLE.EXE to another disk (with DOS command C). Make sure this new disk has a DOS.SYS file on it. Next, rename TODDLE.EXE to AUTORUN.SYS (with DOS command E). Now, copy all the .SPK fils to this disk. Finally, turn off your Atari and remove any cartridges. (XL/XE owners should press the [OPTION] key to turn off BASIC.) Now turn on your computer and Toddle Type will LOAD and RUN automatically.

With a lot of patient assistance from Kevin Gevatosky of Covox, I gave Toddle Type its own stand-alone speech created with the Covox Voice Master Junior. It was not easy to get everything working at first, so in an upcoming **Antic** article I will explain the programming techniques I learned.

You *don't* need a Covox Voice Master (reviewed in the June 1988 **Antic**) to play Talking Toddle Type. The complete set of working speech files are on this month's Antic Disk.

After you LOAD Talking Toddle Type, you will be prompted to press [SELECT] to indicate the number of the disk drive that your speech files are on. If you have a RAMdisk, you can copy all the .SPK extender files to it before running Talking Toddle Type. However, each .SPK file is only about 3K, so it doesn't take much time to load from a floppy disk while the game is being played.

If you do have your own Covox Voice Master Junior (or the older Voice Master model), you can easily replace the A.SPK through Z.SPK files with your own voice—or with any sounds you choose. You must use the Atari 800 version of Covox software, because the XL and XE versions use memory banks that Talking Toddle Type can't access.

Set up your Voice Master according to the instructions that come with the product (you'll need to have BASIC turned on). From the main menu of the Covox software, choose the selection for exiting to BASIC. Now LOAD and RUN the program ABCMAKE.BAS from this month's Antic Disk. When you're prompted for a letter to learn, just type that letter and press [RETURN]. The inverse plus sign at the top left of the screen indicates that the

Voice Master is ready to learn a "word."

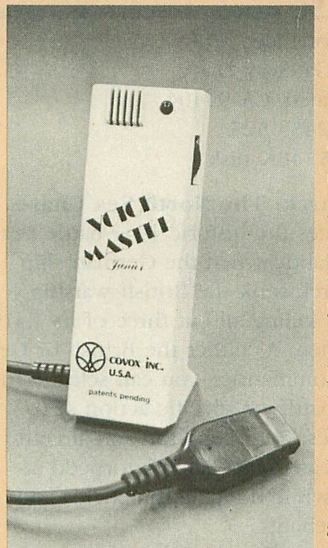
Talking Toddle Type can handle a stand-alone speech file as long as 3K—enough for a phrase or sentence about six to eight words long. If a file is much larger, the end of your message will be cut off in playback. But each speech file is considered by the Voice Master to be one word, even if you actually record a short phrase. So you must say each phrase in one quick breath. *Don't pause between words*—or Voice Master will think you're finished!

After each speech fragment is learned and saved, it is automatically played back for you. If you don't like the result, just do it again. To end the program, press [RETURN]. Another short program on this Month's Antic Disk, ABCPLAY.BAS, will read all the speech files and play them back. After you are satisfied with your results, LOAD and RUN Talking Toddle Type (*NOTE TO PARENTS: While testing this program* ***Antic*** *soon discovered that if you tap a key while speech is being played back, it produces comical sound effects such as "Max Headroom" sputterings. For sanity insurance you might want to buy yourself some earplugs—just in case your child stumbles onto this potential of the software.*—ANTIC ED)

You don't need a Covox Voice Master to play.

Your October 1988 Antic Disk—featuring the Talking Toddle Type disk bonus as well as every type-in program from this issue—will be shipped to you within 24 hours after receiving your order. Just phone Toll-Free to the Antic Disk Desk at **(800) 234-7001**. The monthly disk is only $5.95 (plus $2 for shipping and handling) on your Visa or MasterCard. Or mail a $5.95 check (plus $2 shipping and handling) to Antic Disk Desk, 544 Second Street, San Francisco, CA 94107. ▲

Covox Speech Thing Write-In



As you'll see on this month's Super Disk Bonus Page, Contributing Editor Matthew Ratcliff has developed software tools that easily make **Antic** disk files talk. The speech is created with the Covox Voice Master Junior ($39.95), but it is accessed from the monthly Antic Disk without any special add-on equipment. This stand-alone talking software is a real breakthrough in 8-bit Atari programming.

Although Voice Master Junior produces perfectly understandable speech, it has the unmistakably flat, mechanical sound of traditional talking computers. But the new Covox Speech Thing, only $69.95 for the IBM PC version, is an 8-bit digital-to-analog sound converter that plays true high-fidelity speech and music through its own small amplifier-speaker. Samples of the PC Speech Thing we heard sound like a real human being recorded on tape.

Covox already has made prototype Speech Thing playback hardware for the 8-bit Atari. This product would be a small amplifier-speaker with a cable connecting it to both joystick ports. But Covox hesitates to continue developing an Atari Speech Thing all the way to market unless it sees convincing evidence that enough 8-bit users out there will want to buy it. (Covox hasn't developed any ST products yet and believes that a Speech Thing ST conversion would be beyond their resources at this time.)

Please note that because of the standard 8-bit Atari's memory limits, Speech Thing hardware would essentially be a super-quality playback system for our computers. However, the product would also come with a disk library of basic sounds and words that Atari users could edit into full speech files. Also, the editing software for the PC Speech Thing (it's 80K big) compresses data so that only 2,000 bytes per second are needed for natural-sounding sounds—and PC-created files could be ported directly to the 8-bit Atari.

Here's where you come in. In an **Antic** issue packed with multiple firsts for the Atari 8-bit—this is another one. For the first time, an independent company has *asked* **Antic** to start a write-in campaign about a potential Atari conversion of one of its products!

If you think that the Speech Thing, even with its current limitations as described above, is something that you would *probably* want to buy direct from the manufacturer for around $69.95, write a letter expressing your interest (and including your return address) to: John L. Stewart, President, Covox Inc., 675-D Conger Street, Eugene, OR 97402.

Covox even offers to send a Speech Thing demonstration cassette Free to the first 100 **Antic** readers who write! Remember, sending this letter does NOT obligate you to buy a Speech Thing for your 8-bit Atari. You are just expressing your strong interest in checking out the final product when it becomes available. After all, *natural-quality* Atari 8-bit speech playback for only $69.95 is not too shabby! ▲

Return the favor. When you call a manufacturer or supplier about a product you've seen advertised or otherwise mentioned in ANTIC, please tell them so. This will help us to continue to bring you the latest information about products that will make your Atari computer an even more valuable investment in the future.
—ANTIC ED

TURBO BASIC KIT

(programming utilities)
Ron Fetzer
22 Monaco Avenue
Elmont, NY 11993
(516) 352-1569
$5, 64K disk

The powerful public domain programming language Turbo BASIC is packaged on this disk with original add-ons. The **Complete Turbo-BASIC Kit** has a 37-page documentation file, tutorials on arrays, matrixes and sorting, and two utilities—a disk cataloger and a bulk disk formatter. Turbo BASIC adds 42 more commands and 22 more functions to Atari BASIC, and increases usable RAM by 1.7K to 34K. All the add-on material has been put into public domain, but you can obtain the entire package from the author.

GENEALOGICAL COMPUTING

(quarterly magazine)
Ancestry Inc.
P.O. Box 476
Salt Lake City, UT 84110
(800) 531-1790
$25 per year

Genealogical Computing will help you and your Atari find out exactly where Uncle Todd got those ears. The Beginner's Board column helps the genealogy newcomer in finding appropriate computer hardware and software, and the Tech Notes column discusses programming and advanced techniques for those who want to expand their capabilities beyond the user manual. Utility programs are also included. Subscribers add $5 in Mexico or Canada, $10 in other foreign countries.

BISMARCK: NORTH SEA CHASE

(Datasoft) Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(800) 245-4525
$29.95, 48K disk

Bismarck: The North Sea Chase simulates the historic 1941 battle in the icy Atlantic when the German ship Bismarck sunk the British warship Hood, killing all but three of its 1,415 crewmen. As either the British or German commander, you can select a full-scale battle or specific action sequences. You direct the anti-aircraft and heavy guns, launch torpedo attacks while dodging minefields and and icebergs.

CLASSIC COVERS

(equipment covers)
Phoenix International
1090 South 350 East
Provo, UT 84601
(801) 377-2272
$7.99 to $18

Durable, water resistant **Classic Covers** fit over all your Atari equipment, as well as monitors and third-party printers. The special naugahyde anti-static material eliminates static charges that harm electronic equipment. These custom-fit covers won't trap moisture or heat either.

ORGANIZER II

(lifestyle computer)
Psion Inc.
320 Sylvan Lake Road
Watertown, CT 06779
(203) 274-7521
$249.99

About $250 and a single 9-volt battery can place at your fingertips a diary, alarm system, 12-digit calculator, rolodex, calendar—in fact, almost anything you use to record important facts and figures. With 32K memory built in, the **Organizer II** has enough room for about 2,000 entries, each with a limit of 256 characters. Memory expansion is available through external cartridges, and the Organizer II can be connected to any home or office computer, monitor, printer or other peripheral.

DISKRIBE MARKERS

(marking pens)
Sanford Corp.
2740 Washington Blvd.
Bellwood, IL 60104
(312) 547-6650
$2.50

With **Diskribe** markers, you can write directly onto floppy disks, eliminating not only the use of disk labels but also the confusion that could result from misplacing disk jackets. The gold or silver ink from these pens dries quickly and is highly visible, permanent and safe.



AL/65 DEVELOPMENT SYSTEM

(program utility)
Omega Soft
P.O. Box 139
Harrells, NC 28444
(919) 532-2359
$47.95, 48K disk

AL/65, a linker-based assembler, compiles your source code into relocatable code which can be used in other programs. And the linker connects all of your relocatable files into one object file, to make a ready-to-run program. Most source files should take less than 20 seconds to assemble. It would take only about 25 seconds to link even a longer program made from 17 relocatable files containing 500 instructions, 48 external labels and 140 label references. AL/65 offers full screen editing, user-definable macros, custom character sets and a command processor DOS.

GRAVIS MK VI JOYSTICK,THINGI,

(accessories)
Advanced Gravis
6894 Palm Avenue
Burnaby, British Columbia
Canada V5J 4M3
(604) 434-7274

The **Gravis MK VI** switch controller ($39.95) is state-of-the-art joystick featuring eight-position centering tension control that tailors the stick to your preference. The rugged MK VI has a six-foot cable and three independent fire buttons, as well as a one-year warranty.

Create workspace out of thin air with **THiNGi** ($7.95), an indestructible copy holder that you can mount on your monitor or at virtually any workstation. With THiNGi, you can keep your hard copy mere inches from your monitor *and* at monitor level, thus reducing neck and eyestrain. The strong plastic clip holds single or multiple pages.

POCKET WORDMASTER

(electronic thesaurus)
Franklin Computer Corp.
Route 73 and Haddonfield Road
Pennsauken, NJ 08110
(609) 488-0600
$129.95

Need another word for "insouciant?" Try the **Pocket Wordmaster WM-1200**, which contains over 35,000 entry words and 470,000 synonyms from Merriam-Webster's Collegiate Thesaurus. The Pocket Wordmaster organizes synonyms grouped according to the different meanings of the entry word. It also gives you hyphenation points, inflected forms of the word, and parts of speech. And if you enter a variation of your word ("insouciantly"), it will return a synonym that reflects that variation ("indifferently").

If this isn't enough, the Pocket Wordmaster has an 80,000-word spelling checker built in, and can help you with crosswords and Scrabble. If you want to goof off, but still look as if you're doing something important, you can play challenging word games such as hangman and anagrams.



KARATEKA,LODE RUNNER

(arcade games)
Broderbund Software
17 Paul Drive
San Rafael, CA 94903-2101
(415) 492-3200
$14.95, 48K disk

Broderbund has reduced the price of classic best-selling action games **Karateka** and **Lode Runner** to $14.95—a savings of as much as 57% off the original prices.

MINI-VAC

(vacuum cleaner)
Mini-Vac Inc.
217 S. Orange Street
Glendale, CA 91204
(818) 244-6777
$29.95

Mini-Vac is a lightweight vacuum cleaner designed to remove those minute particles of dust and grunge that settle into the most inaccessible cracks of your computer. Mini-Vac comes with two interchangeable wands, two fine bristle brushes and a cloth vacuum bag. It can use either DC or AC power.

SSI CLASSICS

(strategy games)
Mindscape Inc.
3444 Dundee Road
Northbrook, IL 60062
(312) 480-7667
$14.95, 48K disk

Mindscape has entered an exclusive arrangement with Strategic Simulations Inc. to publish classic SSI titles such as **Fortress**, **Battalion Commander**, **Nam** and **Geopolitique 1990** under its Thunder Mountain budget label. Upcoming titles include Cartels and Cutthroats, Combat Leader, Galactic Gladiators and Queen of Hearts.

CORD-MINDER

(telephone cord)
Preco, Inc.
415 N. Maple Grove
Boise, ID 83704
(308) 323-1003
$14.95

Pick up the phone, and **Cord-Minder** reels out up to seven feet of cord smoothly and easily. When you hang up, Cord-Minder automatically takes up the slack and keeps the cord out of your way. Just unplug your existing handset cord and plug in Cord-Minder. It's that easy.

New Products notices are compiled by the ***Antic*** *staff from information provided by the products' manufacturers. Antic welcomes such submissions, but assumes no responsibility for the accuracy of these notices or the performance of the products listed.*

When you want to talk Atari

XL/XE HARDWARE

INTERFACES

ICD
P:R Connection 61.99
Printer Connection 41.99
Supra
1150 .... 39.99
1151 (1200 XL) 40.99
Xetec
Graphix Interface 38.99
Atari
850 Interface 109.00

COMPUTERS

CMO PACKAGE EXCLUSIVE



Atari 800XL & XF551 Disk Drive
w/5 Undocumented ROMS Asteroids, Defender, Missile Command, QIX, Star Raiders **$279**

Atari
800XL 89.99
130XE 139.00

XL/XE ENHANCEMENTS

Axlon 32K Mem. Board (400/800) . 19.99
Atari 80 Column Card 79.99

MODEMS

Atari
SX212 300/1200 (ST) 89.99
XMM301 .... 42.99
Anchor
VM520 300/1200 ST Dir. Con 119.00
Avatex
1200 HC 94.99
2400 .... 179.00
Supra
2400 Baud XL/XE or ST 169.00
2400 Baud (no software) 149.00

MONITORS

Magnavox
CM8505 14" Composite/RGB/TTL 199.00

ST HARDWARE



ATARI SM1224 RGB Color Monitor **$329**

520ST FM RGB/Color System . . . 789.00
Includes: 520 ST FM with 3½" drive, mouse & 1224 color monitor.
SM124 Monochrome Monitor 179.00

Call For Current Information On The Entire ST Line!

DRIVES

Atari
XF551 Drive (XL/XE) 179.00
SHD204 20 Meg Hard Drive 589.00



Atari (ST) 314 DS/DD **$219**

I.B.
5¼" 40 Track (ST) 219.00
5¼" 80 Track (ST) 279.00
I.C.D.
FA•ST 20 Meg 629.00
FA•ST 30 Meg 869.00
FA•ST Dual Hard Drives .... Call
Indus
GTS 100 3½" DS/DD (ST) 199.00
GT 1000 5¼" DS/DD (ST) 219.00
GT Drive (XL/XE) 189.00
Supra
FD-10 10MB Removable Floppy w/SCSI 899.00
20 Meg Hard Drive (ST) 579.00
20 Meg Hard Drive (XL/XE) 689.00
30 Meg ST Hard Drive 689.00

PRINTERS

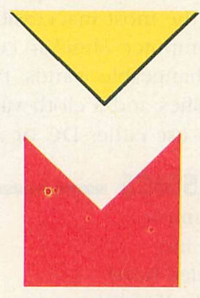
Atari
1027 LQ XL/XE 129.00

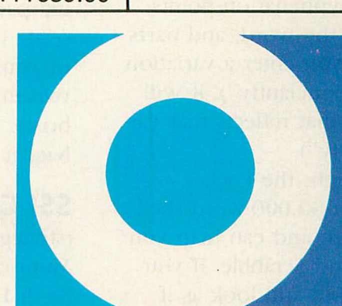


Atari XM-M801 XL/XE Dot Matrix **$199**

XM-M804 ST Dot Matrix 199.00
XDM 121 Letter Qlty. XL/XE 209.00
Brother
M-1109 100 cps Dot Matrix 169.00
M-1509 180 cps Dot Matrix 389.00
HR-20 22 cps Daisywheel 339.00
Citizen
120D 120 cps Dot Matrix 149.00
180D 180 cps Dot Matrix 179.00
Premier-35 35 cps Daisywheel .. 549.00
Epson
LX-800 150 cps, 80 col 189.00
Hi-80 4 pen plotter 269.00
FX-850 264 cps, 80 col .... Call
FX-1050 264 cps, 132 col .... Call
LQ-500 180 cps, 24-wire .... Call
LQ-850 330 cps, 80 col .... Call
LQ-1050 330 cps, 132 col .... New
NEC
P2200 pinwriter 24-wire 379.00
P5200 pinwriter 24-wire 599.00
P5300 pinwriter 132 col 799.00
Okidata
Okimate 20 color printer 129.00
ML-182 +120 cps, 80 column 229.00
ML-320 + 300 cps, 80 column 379.00
ML-390 + 270 cps, 24-Wire 539.00
Panasonic
KX-P1080i 144 cps, 80 col 169.00
KX-P1091i 194 cps, 80 col 199.00
Star Micronics
NX-1000 140 cps, 80 column 179.00
NX-15 120 cps, 132 column 319.00
Toshiba
P321-SL 216 cps, 24-wire 499.00







SELECT FROM OVER 3000 PRODUCTS

COMPUTER MAIL ORDER

........you want to talk to us.

XL/XE SOFTWARE

Access
Leaderboard Golf 13.99
Accolade
Hardball 19.99
Atari
Atariwriter Plus 35.99
Filemanager 11.99
Music Painter 11.99

SUBLOGIC Flight Simulator II $32.99

Atari Program Exchange
Misc. Programs (cassettes) .... at 1.99
Broderbund
Graphics Library I, II, III 14.99
Printshop 27.99
Datasoft
Alternate Reality (City) 25.99
221 Baker St. 20.99
Electronic Arts
Touchdown Football 12.99
Firebird
Guild of Thieves 19.99
Silicon Dreams 19.99
Jewels of Darkness 19.99
Microprose
Top Gunner 16.99
F-15 Eagle Strike 21.99
Silent Service 22.99
Origin Systems
Ultima 4 .... 36.99
Roklyn SPECIAL
Anti-Sub/Journey to Planet .... (ea.) 3.99
Strategic Simulations
Colonial Conquest 24.99
Gemstone Warrior 11.99
Sublogic
Scenery Arizona 14.99
X-Lent
Typesetter 22.99
Printshop Interface 21.99

ACCESSORIES

MD1-M SS/DD 5¼" 8.49
MD2-DM DS/DD 5¼" 8.99
MF-1DDM SS/DD 3½" 11.99
MF2-DDM DS/DD 3½" 18.49
Sony
MD1D SS/DD 5¼" 6.99
MD2D DS/DD 5¼" 7.99
MFD-1DD SS/DD 3½" 11.99
MFD-2DD DS/DD 3½" 17.99
Allsop Disk Holders
Disk File 60-5¼" 9.99
Disk File 30-3½" 9.99
Curtis
Emerald 39.99
Safe Strip 19.99
Universal Printer Stand 14.99
Tool Kit 22.99
ICD
BBS Express (ST) 52.99
Sparta DOS Construction Set 28.99
US Doubler/Sparta DOS 47.99
Real Time Clock 48.99
Rambo XL 29.99
US Doubler 28.99

ST SOFTWARE

ACCOLADE Bubble Ghost $28.99

Abacus
PC Board Designer 129.00
Access
Leaderboard Golf 22.99
Activision
Music Studio 28.99
Antic
CAD 3-D 31.99
Avant Garde
PC Ditto 59.99
Batteries Included
Degas Elite 37.99

ST SOFTWARE

Comnet
ST Term 20.99
Electronic Arts
Gridiron Football/Auto Duel. (ea.) 26.99
Isgur Portfolio 119.00
Firebird
Silicon Dreams 19.99
The Sentry 19.99
Infocom
Beyond Zork 34.99
Metacomco
ISO Pascal 59.99
Microprose
Gunship 28.99
F-15 Strike/Silent Service (ea.) 24.99
Miles Software
ST Wars 24.99
Mindscape
Road Runner 37.99
Mark Williams
C 119.00
Paradox
Wanderer (3D) 24.99
Progressive Computer
Graphic Artist 1.5 .... 129.00
Psygnosis
Barbarian/Deep Space .... (ea.) 25.99
Soft Logik Corp.
Publishing Partner 54.99
Strategic Simulations
Questron II 37.99
Sublogic
Flight Simulator II 33.99
Timeworks
Swiftcalc/Wordwriter .... (ea.) 46.99
Partner ST 37.99

TIMEWORKS Desktop Publisher $89.99

Word Perfect Corp
Word Perfect 4.1 .... 179.00

In the U.S.A. and in Canada

Call toll-free: 1-800-233-8950

Outside the U.S.A. call 717-327-9575, Fax 717-327-1217
Educational, Governmental and Corporate Organizations call toll-free 1-800-221-4283
CMO, 101 Reighard Ave., Dept. B6, Williamsport, PA 17701



OVER 350,000 SATISFIED CUSTOMERS • ALL MAJOR CREDIT CARDS ACCEPTED • CREDIT CARDS ARE NOT CHARGED UNTIL WE SHIP

POLICY: Add 3% (minimum $7.00) shipping and handling. Larger shipments may require additional charges. Personal and company checks require 3 weeks to clear. For faster delivery, use your credit card or send cashier's check or bank money order. Credit cards are not charged until we ship. Pennsylvania residents add 6% sales tax. All prices are U.S.A. prices and are subject to change, and all items are subject to availability. Defective software will be replaced with the same item only. Hardware will be replaced or repaired at our discretion within the terms and limits of the manufacturer's warranty. We cannot guarantee compatibility. All sales are final and returned shipments are subject to a restocking fee. We are not responsible for typographic or photographic errors.

B610



COMPUTER SOFTWARE SERVICES

P.O. BOX 17660, ROCHESTER, N.Y. 14617
ATARI® PHONE (716) 467-9326

JUST RELEASED !



$99.95 "SUPER ARCHIVER II"!
(for ATARI 1050 drives)

NOW! COPYS all **ENHANCED DENSITY** programs plus retains all of the features of our World Famous **SUPER ARCHIVER!** (see below). Allows you to **COPY** or **CREATE** single or **ENHANCED** density protection schemes (including **PHANTOM SECTORS!**). Completely automatic; compatible with the **BIT-WRITER!**; the **ULTIMATE BACKUP/PROGRAMING** device! Only $99.95 plus $4 S/H/I.
NOTICE! If you already own a **SUPER ARCHIVER!**, you can upgrade to a **SUPER ARCHIVER II** for only $29.95 plus $4 S/H/I (disk only - no additional hardware required!).

$69.95 THE "SUPER ARCHIVER"!® $69.95
(for ATARI 1050 drives)

The new **SUPER ARCHIVER**, obsoletes **all copying devices** currently available for the **ATARI 1050!** It **eliminates** the need for Patches, **PDB files**, Computer Hardware, etc. Copies are **exact duplicates** of originals and **will run on any drive**; without exaggeration, the **SUPER ARCHIVER** is the **most powerful PROGRAMMING/COPYING** device available for the 1050! Installation consists of a plug-in chip and 6 **simple** solder connections. Softwares included. Features are:

- **TRUE DOUBLE DENSITY**
- **ULTRA-SPEED** read/write
- **FULLY AUTOMATIC COPYING**
- **SUPPORTS EXTRA MEMORY**
- **SCREEN DUMP** to printer
- **TOGGLE HEX/DEC DISPLAY**
- **SECTOR** or **TRACK TRACING**
- **AUTOMATIC DIAGNOSTICS**
- **DISPLAYS HIDDEN PROTECTION**
- **ADJUSTABLE/CUSTOM SKEWING**
- **AUTOMATIC SPEED COMPENSATION**
- **AUTOMATIC/PROGRAMMABLE PHANTOM SECTOR MAKER**
- **ARCHIVER/HAPPY ARCHIVER COMPATIBLE**
- **BUILT-IN EDITOR**-reads, writes, displays upto 35 sectors/track (short)
- **BUILT-IN CUSTOM FORMATTER** - upto 40 sectors/track
- **BUILT-IN DISASSEMBLER**
- **BUILT-IN MAPPER** - upto 42 sectors/track
- **DISPLAYS/COPIES** Double Density **HEADERS**
- **AUTOMATIC FORMAT LENGTH CORRECTION**
- **SIMPLE INSTALLATION**

The **SUPER ARCHIVER** is so **POWERFUL** that the only programs we know that can't be copied are the newer **ELECTRONIC ARTS** and **SYNFILE/SYNCALC** (34 **FULL** sectors/track). If you want it **ALL**.... buy the "**BIT-WRITER**"! also . . . then you'll **be able to copy** even these programs! Only $69.95 plus $4 S/H/I.

DEALER/DISTRIBUTOR/USER GROUP Discounts available call for info.
PHONE Orders - MASTER CARD, VISA MAIL - Money Orders, Checks.

ATARI®

$79.95 THE SUPER ARCHIVER "BIT-WRITER"! $79.95

The Super Archiver "**BIT-WRITER**"! is capable of **duplicating even** the "uncopyable" **EA** and **SYN** series which employ 34 **FULL** sectors/tracks. "**BIT-WRITER**"! is capable of reproducing these and **FUTURE** protection schemes of non physically damaged disks. **PLUG-IN** circuit boards and 4 **simple** solder connections. The **SUPER ARCHIVER** with "**BIT-WRITER**"! is the ultimate **PROGRAMMING/COPYING** device for Atari 1050's **EXACT DUPLICATES** of originals are made! Copies run on **ANY** drive. Must be used with Super Archiver. Only $79.95 plus $4 S/H/I.

$69.95 "ULTRA SPEED PLUS" $69.95

Imagine a universal XL/XE Operating System so easy to use that anyone can operate it instantly, yet so versatile and powerful that every Hacker, Programer and Ramdisk owner will wonder how they ever got along without it! Ultra Speed Plus puts unbelievable speed and convenience at your fingertips. Use **ANY DOS** to place an **ULTRA SPEED** format on your disks, boot any drive (1-9) upon power-up, format your **RAMDISK** in Double Density, activate a built-in **400/800 OS** for software compatibility, plus dozens of other features to numerous to mention! Below are just a **FEW** features you'll find in the amazing **OS:**

- **ULTRA** Speed SIO for most modified drives
- **ULTRA** Speed is toggleable
- Boot directly from **RAMDISK**
- Special timer circuits not required for 1 or 2 Meg upgrades
- Background colors adjustable
- Reverse use of **OPTION** key
- Cold-start without memory loss
- Built in floppy disk configuration editor (1-9)
- Built in **RAMDISK** configuration editor (1-9)
- **RAMDISK** exactly duplicates floppy drive so sector copying and sector editing are now possible
- Built in **MINI** Sector Copier
- Toggle **SCREEN OFF** for up to 40% increase of processing speed
- Toggle internal **BASIC**
- Rom resident disk loader program **(MACH 10** menu)
- **DOUBLE DENSITY RAMDISK** capable
- Entire **MEMORY** test that pinpoints defective **RAM** chip
- Boot any drive (1-9) upon power-up or cold-start
- Supports memory upgrades up to **TWO MEGABYTES**
- **THREE** Operating Systems in one **(XL/XE, 400/800, ULTRA SPEED PLUS)**

$29.95 "XF551 ENHANCER!" $29.95

The XF551 Atari drive is a fine product with one major flaw . . . it writes to side TWO of your floppy disks **BACKWARDS**. This causes read/write incompatibility problems with all other single sided drives made for Atari such as Indus. Trak, Rana, Percom, Astra, Atari 1050, Atari 810, etc. Add the **XF551 ENHANCER** to the new XF551 drive and your problems are over! This device will restore 100% compatibility while retaining original design qualities of Ataris' super new drive. The **XF551 ENHANCER** is a **MUST** for all XF551 Owners. Installation is simple. Only $29.95 plus $4 S/H/I.

$39.95 THE "QUINTOPUS!" $39.95

The "QUINTOPUS!" is an inexpensive device that provides a tremendous amount of convenience while eliminating the problems associated with the endless "daisy-chaining" of peripherals (eg: drives, interfaces, printers, modems, cassettes, etc.). The "QUINTOPUS!" is an I/O port expander that converts a single I/O output/input into five additional outputs/inputs. Instead of daisy-chaining all of your peripherals (which often times results in passing a signal through 30 feet or more of cable!), the "QUINTOPUS!" allows each device to be connected directly to the computers through only three or four feet of cable. This is particularly useful when attempting to use ULTRASPEED or WARPSPEED data transfer rates. The "QUINTOPUS!" also provides the "extra" I/O ports often needed to connect devices not having daisy-chaining capabilities. Cable resistance and compacitance are greatly reduced thereby significantly improving the opportunity of accurate data transfers! Only $39.95 plus $4 S/H/I.

$59.95 THE "QUINTOPUS!" WITH SWITCHABLE PORTS $59.95

This Deluxe version of the "QUINTOPUS!" has all of the above features with the additional benefits of two SWITCHABLE PORTS! This means you can connect two computers to one printer or two printers to one computer; you can switch in a computer/printer combination and while your printing out a long document, switch in a second computer to access a modem, disk drive, cassette deck, etc! Switch multiple combinations of peripherals or computers without the hassel of re-arranging I/O cables . . . . simply flip a switch! Only $59.95 plus $4 S/H/I.

FIRE SALE!

Recently, one of the adjoining stores to our offices/warehouse had a fire which forced us to re-locate. A large quantity of our software/hardware/documentation suffered heat/smoke/water damage. We salvaged as much as possible and are offering these items to you at ridiculously LOW PRICES. All items are fully warrantied. NO COD's - Cash, Bank Checks, Money Orders, VISA or MASTER CARD. ALL SALES FINAL. Quantities are limited.

	NORMALLY	FIRE SALE
1. PILL (minus epoxy and shell)	$ 70	$ 19
2. SUPER PILL (minus epoxy and shell)	80	22
3. XL FIX (DISK)	50	10
4. XL FIX ROM	70	19
5. ULTRA MENU/DOS	30	19
6. DISKCRACKER (Newest version)	50	19
7. ELECTRONIC PHANTOM SECTOR MAKER DELUXE	60	35
8. RICHMANS 80 COLUMN WORD PROCESSOR	60	29
9. MIRACLE (Disk only Version of Impossible)	70	19
10. THE GUARDIAN	40	15
11. IMPOSSIBLE for 800 or 800XL (Kit)	150	49
12. IMPOSSIBLE for 800 or 800XL (Wired)	150	69
13. XL MATE	30	15
14. COMPACTOR	30	15
15. KLONE II (Generic HAPPY backup)	100	75
16. SILENCER	30	19
17. TRANQUILIZER	30	15
18. BLACK PATCH (MASTER)	50	25
19. BLACK PATCH DATA DISKS 1 & 2	20	10

*Order 5 items or more and we will pay the freight!
These SPECIALS are for C.S.S. customers only - NO DEALER DISCOUNTS - NO RAINCHECKS - LIMITED QUANTITIES
*SHIPPING! Add $4 for Shipping/Handling/Insurance within the U.S.A. UPS BLUE LABLE (2nd DAY AIR) available for $3 extra per shipment.

CALL TODAY! (716) 467-9326
9 am - 5 pm (EST) WEEKDAYS

COMPUTER SOFTWARE SERVICES
P.O. Box 17660
Rochester, N.Y. 14617



By BERNARD TAYLOR

The Seven Skulls

Rubik's Cube of ancient Japan









The Seven Skulls is an evocative, challenging multi-level puzzle. Line up the rotating skulls to win—but every time you move one, two others move also. This BASIC program works on all 8-bit Atari computers with 32K and disk, or 24K and cassette.

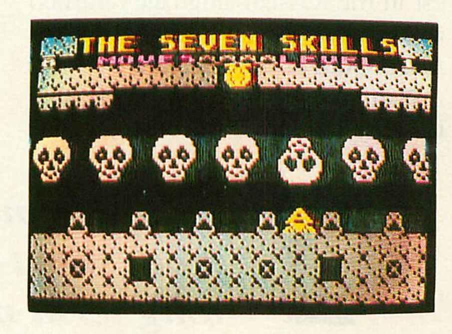
Alas, bold seafarer! A tremendous storm wrecked your ship off the rocky coast of 17th-century Japan. Overpowered by samurai warriors, you are taken to the castle of Lord Tokugawa, the Shogun (supreme warlord) of all Japan. You are somewhat upset to learn that for the crime of being a "barbarian," the punishment is. . .death!

But wait! Lord Tokugawa's sister, the lovely Princess Tanuki, demands that you be given the test of The Seven Skulls, a challenge in logic which was devised to aid the Shogun in selecting or promoting the best and brightest warriors in his military regime.

Escorted by a cadre of guards, you follow Tanuki down into a cold, damp chamber beneath the castle. On the far wall is a row of seven human skulls. . .

SKULL TEST

Each of The Seven Skulls is positioned in one of four directions—chin pointing left, right, up or down. Your goal is to turn each skull clockwise until all seven have their chins pointing downward. Move your joystick left or right to center the golden "pointer" under the skull you want to rotate, then press the joystick button.



Sounds easy, doesn't it? But as you rotate one skull, the skulls on both sides also turn clockwise. Turning a skull at either end of the row causes that skull, the adjacent skull, and the skull at the opposite end of the row to rotate. Now you've got problems.

There are eight known levels of success in the test of The Seven Skulls—Shark Bait, Slave, Food Taster, Foot Soldier, Bowman, Castle Guard, Samurai, and Daimyo. But it is rumored that Princess Tanuki is looking for someone clever enough to help her overthrow her brother, the Shogun. Even Raden, the Japanese God of Thunder, would honor such a worthy individual.

Successfully aligning all the skulls makes their eyes spin. And after a short tune, the skulls will be arranged in a new pattern for you to solve—or die trying.

You have 30 moves in which to complete your task on each level. Running out of moves ends the game and reveals the position you have earned in Lord Tokugawa's shogunate. Press [SELECT] any time during the game to restart the test. On rare occasions the Princess has been known to award a second chance to those showing exceptional promise. A gong will sound twice if you are to receive a second chance and the current puzzle will be reset to its original position so you can try again.

But enough! The Princess Tanuki grows impatient. She strikes the gong once. Let the test begin! Type in Listing 1, SKULLS.BAS, check it with TYPO II and SAVE a copy before you RUN it. ▲

Listing on page 75

Bernard Taylor is a bulk mailing specialist from Roseville, California. He enjoys programming strategy games and claims to have played (if not solved) every Infocom text adventure ever produced for the Atari 800.



By ANDREW THOMAS

Quizzer

Learn Russian chemistry vocabulary—or anything else

Quizzer is a flexible, easily adapted memorization aid that can help you learn any subject where it's useful to practice with matching pairs. The sample quiz with this article is a chemistry vocabulary drill in Russian/English that uses an included cyrillic character font. This BASIC program works on all 8-bit Atari computers having at least 48K memory and a disk drive.

I had an advantage over the other students in my college Russian classes. I had the help of a computer. I reviewed vocabulary with a program I'd written. Especially before class quizzes, I practiced quizzing myself.

Learning a new vocabulary is not the only aspect of learning a language, but it is certainly the major one. The average number of words Americans *use* in speaking or writing is 10,000. The average number of words *recognized* by Americans is 30,000 to 40,000. This is not learned by reading the dictionary once.

The key to moving new words from short-term memory to long-term memory is *rehearsal*. The more you encounter or use a word, the more likely you are to remember it. Beginning language students rehearse by quizzing themselves while covering one side of a page that shows a foreign word on one side and the English translation on the other.

One problem with this method is that the translation can be triggered more by a word's *placement* within the list rather than by the actual sight of it. Another problem is that this method does not rehearse spelling, unless the student writes the translation—and this wastes time verifying the spelling.

A computer program, however, can present words randomly and check spelling for the student. So I wrote software to do it.

But that was five years ago in Fortran on a graphics terminal of a mainframe. With the warming relationship between the superpowers, my interest in the Russian language returned and I wanted a similar program for my Atari. Quizzer is the result.

Naturally, I don't expect everyone to share my interest in Russian. The program has been designed so it can be easily modified for other languages. In addition, it can be modified to cover just about any other subject where it is useful to memorize matching pairs. Some examples would be chemical symbols and names, states and capitals, book titles and authors, values and formulas, or case citations and established precedents.

> ***The key to moving new words from short-term memory to long term memory is rehearsal. But one problem is that the translation can be triggered more by a word's placement within a list instead of the actual sight of the word.***

GETTING STARTED

You need three disk files: the quizzer program (QUIZZER.BAS), the Russian/English quiz (RUSENG.QUI) and the special cyrillic character font, (CYRILL.FNT). Antic Disk owners will find all three files ready-to-use on the October 1988 Antic Disk.

Type in Listing 1, QUIZZER.BAS, check it with TYPO II and SAVE a copy before you RUN it. This is the main program.

Next, type in Listing 2, check it with TYPO II and SAVE a copy before you RUN it. When RUN, Listing 2 creates Quizzer's Russian/English Quiz file, RUSENG.QUI.

Finally, type in Listing 3, check it with TYPO II and SAVE a copy before your RUN it. When RUN, Listing 3 creates Quizzer's special cyrillic character font, CYRILL.FNT. I made this Russian font with a public domain program called "Create-A-Font." Later in this article I'll explain how you can use Quizzer without an alternate character set.

Quizzer first asks whether to present the words randomly or in order. The consecutive order can be used when you want to ensure that you're quizzed on each pair.

The commands available to you are shown at the bottom of the screen.

The quiz buffer is empty when the program begins, so you have only three first-letter commands available—[L]oad a file of quiz pairs, [A]dd quiz pairs, or [E]nd the program. Once the quiz pairs are in the buffer, you can [Q]uiz yourself.

During a quiz, the program prints either an English or foreign word at the top of the screen in easy-to-see Graphics 2 characters and asks you for its translation. For example, if your Atari gives you a Russian word, answer with its English translation. If your Atari shows you an English word, type its Russian equivalent.

Any time during your quiz, you can view your [T]ally to see well how you're doing. You should answer the quiz as fast as you can, but take time to sound out the foreign word mentally or vocally.



CUSTOMIZING THE PROGRAM

As your vocabulary grows, use the [A]dd command to add new quiz pairs to the program. After adding an item, be sure to [S]ave your modified list to a disk file.

If you enter a quiz pair with a mistake, you are not doomed to be incorrectly quizzed forever. At any time during a quiz you can [D]elete the pair shown on the screen.

Quiz elements are packed together in memory to save space. The BASIC subroutines in lines 300 to 450 that locate quiz pairs can cause a perceptible delay while using large quiz databases. If you want to speed through quiz items, you need to use fewer quiz pairs. Good diversity and speed can be achieved with around 60-70 quiz pairs.

INTERRUPTIONS

The Atari is designed to display only one character set at a time. To get more than one, you have to fool the computer with a display list interrupt.

The display list is a short list of instructions which the ANTIC chip uses to draw and update the screen. The data for Quizzer's display list is in lines 805-806. ANTIC runs through this list sixty times per second.

Whenever ANTIC comes to an instruction code whose seventh bit is set—done by adding 128 to the instruction—it stops processing the display list instructions and quickly runs a brief machine language program. This routine should take no more than about 18 machine cycles to run.

When ANTIC is done with this brief routine, it returns to the display list and picks up where it left off. See lines 210 and 240 for examples of enabling and disabling DLIs. The 66s in these lines disable DLIs. The 194s (or 66+128) enables them.

There is a price to pay for this flexibility. *You* must write the machine language program, place it in memory, then put its address in memory locations 512 (low byte) and 513 (high byte). In Quizzer, this begins at line 1060.

To get two character sets on the screen, you need two interrupts—one tells the computer to use the new font and the other tells it to use the standard font. Each interrupt must include code that puts the other's address in 512 and 513. (In this case, the high byte of both addresses is equal to six, so the routines must only change the low byte, stored in location 512).

Here are the two DLI routines:

The first DLI routine begins at memory location 1664 ($0680). This

```
PHA          ;Save the value of the accumulator by
             ;"pushing" it on the stack
LDA #224
STA CHBASE   ;POKE 54281,224
             ;(Use standard font)
LDA #146     ;(146 is equal to $92, the low byte
             ;of the address of the other DLI routine)
STA VDSLST   ;POKE 512,146
             ;(Place the address of the other
             ;routine here)
STA WSYNC    ;Wait for horizontal synchronization
             ;(Keeps DLIs synchronized with the
             ;screen display)
PLA          ;Restore the old value of the
             ;accumulator by "pulling" it off
             ;the stack.
RTI          ReTurn from Interrupt
```

The second DLI routine begins at 1682 ($0692). This routine makes your Atari use the special cyrillic font.

```
PHA          ;"Push" the accumulator
LDA #156
STA CHBASE   ;POKE 54281,156
             ;(Use cyrillic font)
LDA #128     ;(128 is equal to $80, the low byte
             ;of the address of the other routine)
STA VDSLST   ;POKE 512,128
STA WSYNC    ;Wait for horiz. sync.
PLA          ;"Pull" the accumulator
RTI          ;Return from Interrupt
```

one tells your Atari to use a standard font.

For more information on the Atari display list, read Appendix 8 and the information listed under memory locations 512-513, 560-561 and 54282 in "Mapping the Atari" by Ian Chadwick, Compute! Books.

little computer knowledge—these days, most students—can alter the information to be recorded.

Teachers may also wish to delete lines 2065, 2070, and 2080 in the students' version so that students do not accidentally add to, delete from, or save a file.

As your vocabulary grows, use the [A]dd command to add new quiz pairs to the program.

TEACHERS

If you include the lines from 31010 to 31110, you can keep track of your students' use of Quizzer. When students [E]nd the program, the computer asks for their names and appends the name and [T]ally to a log file. The log file can be viewed in a text editor, or from DOS by copying the file to screen [S:] or printer [P:].

Note, however, that the program has no security. Students with even a

OTHER LANGUAGES, SUBJECTS

Languages besides Russian can be used in Quizzer. The name of the font file in line 1110 needs to be changed. The foreign words in lines 1030 and 1031 need to be changed. And the lengths of the string variables holding these words, DIMensioned in line 1005, need to be adjusted.

The program can also be altered to use only the ATASCII character set for other subjects and for languages which do not use a different alphabet. Just substitute the lines below in place of their counterparts in the program.

```
200 RETURN
230 RETURN
805 DATA 112,112,96,66,64,156,7,
2,71,184,156,66,204,156,112,2,7,
2,7,2,7,2,71,228,157,66,248,157
806 DATA 0,2,2,2,65,164,6
1100 GRAPHICS 0:GOTO 1200
31010 GRAPHICS 0
```

Finally, substitution of one of the two lines below causes the program to quiz in only a single direction.

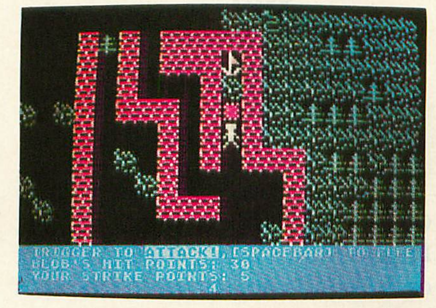
```
7010 QD=1
or:
7010 QD=2
```

Andrew Thomas just graduated from Indiana State University in Terre Haute, where he was a senior consultant on the student staff of the Computer Center.

Listing on page 67

By STEPHEN STOUT

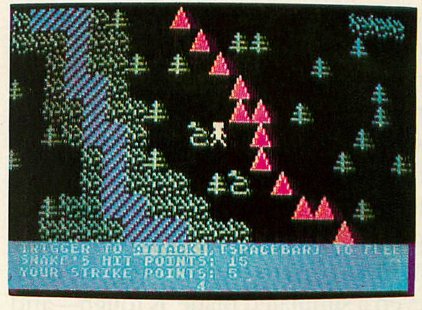
Adventure Creation Contest



Grand Prize Winner "Aaron" by Robert Loux.



Runner-Up "Castles" by Mark Hobler.



Luke Gardiner's Runner-up "Kingdom."

Winners!

(This issue of ***Antic*** *features an Extra Disk Bonus—the three winners of our March 1988 Adventure Creation Contest. Next month's Antic Disk will include another special bonus, a flashy upgrade of the original graphic adventure creator. Don't miss Stephen Stout's Deluxe Adventure Creation Kit on the November 1988 Antic Disk*—ANTIC ED)

When I submitted *Adventure Creation Kit* (**Antic**, March 1988) I included an idea for a contest, which Antic agreed to sponsor. I didn't know what I was getting into.

In no time at all I received an unassuming little package from Antic Publishing. "Oh good, the contest entries," I exclaimed. But what I found inside was a veritable Pandora's Box—32 disks from all over the globe, many with five or six entries apiece.

Daunted by the size of my task, I nevertheless set to it immediately. For hours upon hours, I played the contest entries. Eventually I came to hate my own program, as it started to give me visions of one of those funny little white jackets with leather straps and great big sleeves—often worn in rooms with nice, soft walls. And yet I pressed on.

My head throbbed and my eyes became bloodshot as I slowly narrowed down the contest entries. I missed almost an entire episode of "My Mother the Car," but on I pressed. I couldn't let those contest entrants down.

I stayed alert by consuming vast quantities of a name brand cola-like beverage (I don't do product endorsements). All I remember, once the caffeine-related amnesia wore off, is that when I woke up, only three contest entry disks remained, and someone had scribbled "Winner" on one of them. I don't know what happened to the other disks, but I do recall a dream I had in which I ate a lot of large, black, square tortillas while a guy named Juan sang the theme from "The Addams Family."

Anyway, something good did come out of all this—a Winner and two Runner-Ups.

First prize goes to Robert Loux of Allentown, Pennsylvania for his game, AARON. He wins his choice of one Antic Software product from The Catalog and a disk issue of this magazine.

The runner-ups are Marc Hobler of Homestead, Florida for his game, KINGDOM, and Luke Gardiner, all the way from Hong Kong, with CASTLES. They both win a free disk issue of this magazine.

I'd like to thank everyone who entered the contest, especially those who took the time to include letters with their entries and those who made alterations to the original program. (My lawyers will be in touch.)

Extra Disk Bonus

Flight Simulator Co-

FLIGHT SIMULATOR CO-PILOT

The Atari skies have gotten awfully crowded lately! With the quick success of the Atari XE Game System—which comes with Flight Simulator II on cartridge—there are more and more fliers of all ages. Some of them really get quite good. Others, like myself, have done little more than take off, turn a bit, and crash. I owned Flight Simulator II for almost four years and hadn't even found the Statue of Liberty. Let's face it, flying a plane, even a simulated plane, is tough—and the Flight Simulator II manuals are *dry*!

Now I fly with something approaching ease. Since I bought Charles Gulick's entertaining book, **Flight Simulator Co-Pilot**, I not only found the Statue of Liberty, I landed on its island. I also discovered how to really get use out of those mysterious OMNI and NAV gadgets. From coast to coast I traveled, and now I'm ready to buy those other Scenery Disks.

Witty, entertaining lessons

In this entertaining, witty series of lessons, he holds our hands from "panel familiarization" through simple takeoffs, turns and landings. Enjoying the author's (and our own) cleverness, we eventually discover that we have become experts in flying our Atari Piper 181 small planes.

The appendix gives us specific controls and control codes for all the *8-bit* versions of Flight Simulator—so ST people will need to keep their original manuals handy. Nevertheless, it's hard to imagine a more user-friendly book.

For example, we're reminded in our last regular training session that the takeoff procedure bears repeating: "1. Check carb heat off. 2. Trim for takeoff with two quick notches up. 3. Put on 10 degrees of flap." By this time,



Pilot, Classy Chassy

Even simulated flight is tough.

we know exactly what each term means, and we're not likely to forget. With absolutely no confusion, we have a higher altitude and a lower airspeed, conserving fuel and time.

Then we're off to Seattle, Bryce Canyon, various bridges, and even back to World War I. Points of interest are highlighted, and we're treated to trivia of our scenic trips. ("It might interest you to know that in 1883 there was a bewitched house on Church Street.")

This is the manual which should have come with Flight Simulator. It's the best 10 bucks ever spent by any Flight Simulator owner—no matter what computer you are piloting.—CHESTER COX

$9.95. Microsoft Press, 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073. (206) 882-8080.

CLASSY CHASSY

Classy Chassy is a pinball simulation that does everything Night Mission pinball does—but at about half the price, because it is packaged in a plain brown paper bag. Sure, it lacks the construction set feature found on many of its competitors, but while some people have the time and the patience to build their own machines, others might wish only to flesh out their libraries with a good pinball simulation. I think Classy Chassy would be perfect for the latter, despite its often clumsy keyboard commands (reaching into the keys to shoot the balls makes it hard to get your fingers back on the flipper keys without looking away).—STEVE PANAK

$9.95, 64K disk. Clearstar Softechnologies, P.O. Box 140, Harrells, NC 28444. (919) 532-2359.



BY JEFFREY SUMMERS, M.D.

BOND BROKER

Take on Wall Street with your Atari!

Use your Atari to help select your best investment from among the plethora of choices in bonds, CDs, money markets and mutual funds. Bond Broker is a BASIC program that works on all 8-bit Atari computers of any memory size, with disk or cassette.

Given the recent volatility in the stock markets, many people are looking at alternatives for investing their money. Bonds, bond mutual funds, and certificates of deposit (CDs) are popular alternative investments. They give a fairly constant yield and tend not to suffer from the same ups and downs as stocks.

CDs protect your principal better than bonds or bond mutual funds, but usually give lower yields. Individual bonds are only as stable as the organization that releases them (very stable if from the U.S. government, somewhat more risky when from corporations).

Many people try to reduce their risk by buying shares in a mutual fund that specializes exclusively in bond-type investments. These funds pool investors' money to buy many different bonds, which reduces the impact if one bond defaults. However, there are many different types of bond funds and choosing among them can be difficult.

Bond Broker allows easy comparison of investments held from one to 20 years. Money markets, bank accounts, bonds, bond funds, certificates of deposit (CDs) and treasury bills can all be compared. If you have a crystal ball about the stock market you can even compare estimated returns on stocks. However, you'll get the most reliable results when you compare investments that give a more dependable yield.

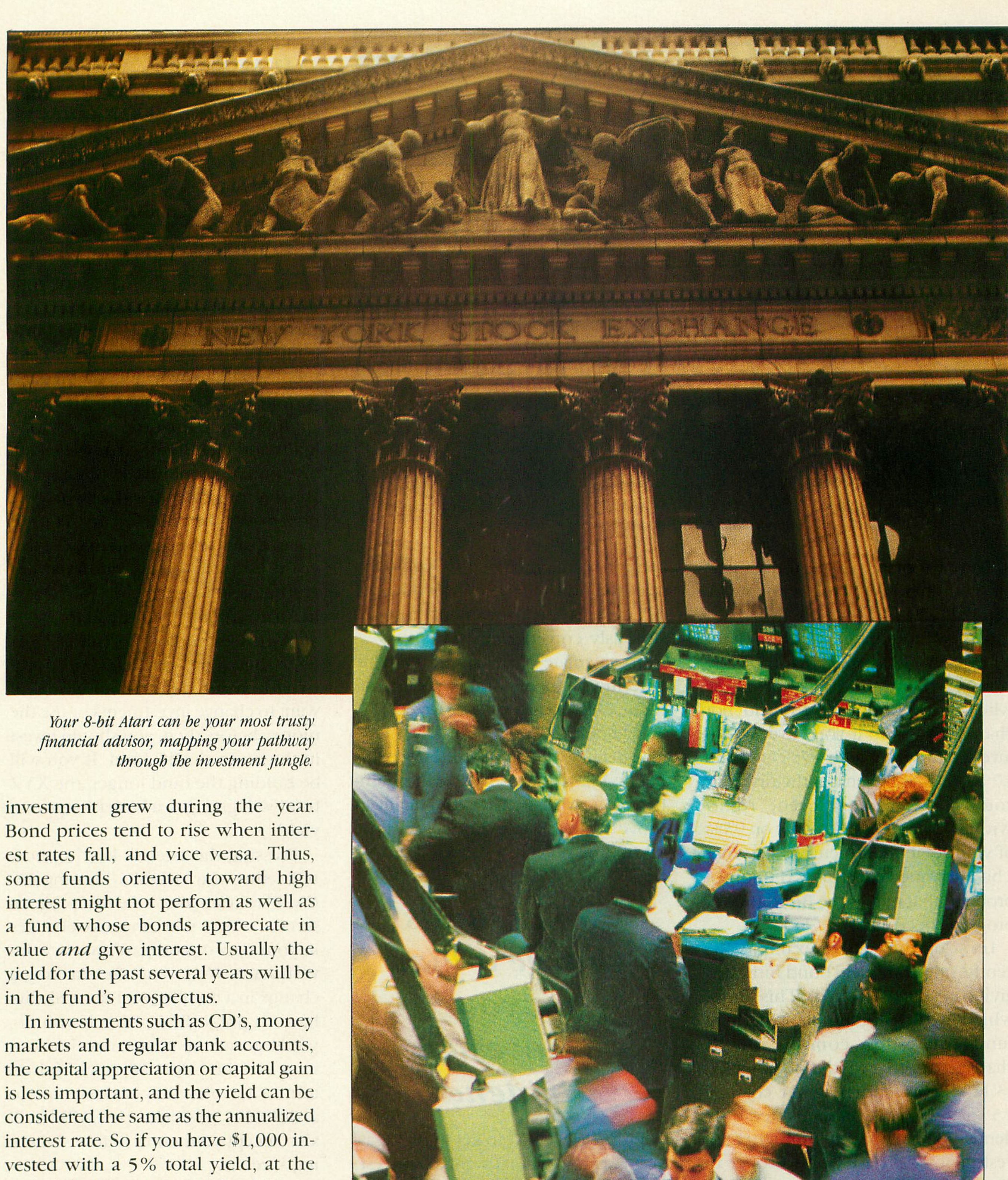
SOME TERMS

Before you use the Bond Broker program, you should understand the following standard investment terms.

A **load** is a sales commission paid when you purchase your investment. With a typical mutual fund load, if you invest $1,000 and there is a 5% load, you actually only have $950 working for you. The other $50 goes as a sales fee. **End-load** funds don't require a load up front, but rather at the end as a redemption fee.

The **yield** of an investment is its total income return, income which often flows from different categories. Annual yield for bonds and similar investments consists of the interest percentage received per year plus any **capital appreciation,** which is the amount that the resale value of your

Many try to reduce risk by buying shares in a mutual fund specializing exclusively in bond-type investments.



Your 8-bit Atari can be your most trusty financial advisor, mapping your pathway through the investment jungle.

investment grew during the year. Bond prices tend to rise when interest rates fall, and vice versa. Thus, some funds oriented toward high interest might not perform as well as a fund whose bonds appreciate in value *and* give interest. Usually the yield for the past several years will be in the fund's prospectus.

In investments such as CD's, money markets and regular bank accounts, the capital appreciation or capital gain is less important, and the yield can be considered the same as the annualized interest rate. So if you have $1,000 invested with a 5% total yield, at the end of the first year you should have $1,050.

Compounding refers to reinvesting your dividends. If you do that, your next year's return will be based on the higher investment. If you reinvested your $50 dividend, you'd have $1,102.50 at the end of the second year instead of $1,100 because the 5% yields are based on $1,050, not $1000.

These are the information categories you'll need to enter into Bond Broker to discover which mutual fund best meets your needs.

However, if plan to live off the interest, you obviously can't reinvest the dividends.

Some funds charge a load on your reinvested dividends. To properly compare them, you'll need to know whether your funds do or do not charge a load. So if you have $1,000 invested in a fund with a 7% load and a 7% yield, at the end of the first year you'll have broken even, right? Wrong. Your 7% yield is only on 93% of your total investment, so you lose a bit after one year. This is the sort of problem that makes the Bond Broker program necessary.

Let's run through an example. Recently, one high-yield bond fund was giving a 12.62% yield. This fund, which we'll call ABC, is a no-load fund—no sales commission is charged. Another fund, XYZ, yielded 13.12%. This fund, however, charged a 5% load except on reinvested dividends. Which fund is the better investment? We'll use Bond Broker to find out.

GETTING STARTED

Type in Listing 1, BOND.BAS, check it with TYPO II and SAVE a copy before you RUN it. RUNning the program brings up a two-column screen.

Bond Broker compares investments two at a time. The numbers that you will need to enter into the program are pretty much what you would expect to find in the sales brochures of any bond-type investment you are seriously considering.

To calculate our example, start by entering the name of the first investment, ABC, then press [RETURN]. The cursor moves to the Load% line. The default value is 0% and since this is a no-load fund we'll leave this number alone. Press [RETURN] again to move to the Rate% line. Now type 12.62, the percent yield for the ABC fund.

Some funds charge a load on your reinvested dividends.

Press [RETURN] to get to the Reinvest line. If you don't want to reinvest, type [N] and press [RETURN]. Otherwise just press [RETURN]. You can try it both ways for the example.

Next we have the Load on Dividends line. The default is that dividend reinvestment does not carry a load, as is the case with our ABC fund. Press [RETURN] and the cursor moves up to the name of the second investment. Type XYZ and [RETURN], then enter 5 for the load and 13.12 for the yield. As with ABC, again there's no load on reinvested dividends. If you decide to change values, move around with the [ARROW] keys. Once you're satisfied with all your entries, press [ESCAPE] to move to the second screen.

SECOND SCREEN

Here you'll see the names of your investments followed by the total return for one to 20 years. Each column contains the amount your investement would be worth if you invested $1 for the specified number of years.

Often, investments with differing loads and yields will cross over. One investment would be better for the short term while the other would be better over the full 20 years. Thus, if you are saving for a car in three to five years, you may desire a different investment strategy than if you're saving for retirement in 20 years.

In this example, the funds cross over between the eleventh and twelfth years. If you think you will want to change investments or use the money before then, you should invest in the no-load ABC fund. If you will be holding the fund longer, the XYZ fund will give you a better long-term yield.

Pressing the asterisk key [*] now will return you to BASIC. Pressing [ESCAPE] returns you to the first program screen, where you can make changes in your data or compare two new investments. Note that after making a change in a number, you don't always have to press [RETURN]. If you do, you'll go to the next entry, but you may use the [ARROW] keys both to terminate your entry and to move to a different position. [ESCAPE] will also accept your entry before switching screens.

You can keep the better of the two investments as it is and change the other, or play "king of the hill" with different investments until you find what's best for you. ▲

Rochester physician Jeffrey Summers is a frequent ***Antic*** *contributor, most recently with the May 1988 Super Disk Bonus,* Antic Data-X.

Listing on page 77

Wall Street Predicts Major New Atari Products

Analyst Isgur's "bullish" report on Atari

By GREGG PEARLMAN, Antic Assistant Editor

Breakthrough information about upcoming Atari products was unveiled in a "bullish" stock analysis report by Lee Isgur, first vice president of the Paine Webber brokerage, advisor to the Antic Publishing board of directors and author of Isgur Portfolio ST software.

* Atari will introduce a 68030-based computer this fall, according to Isgur, as well as a laptop ST with a built-in hard disk.

* In January 1989, Atari will introduce "what will probably be the first 68000-based game machine." It should retail at around $199. Atari will also double the $10 million it spent advertising video games last year.

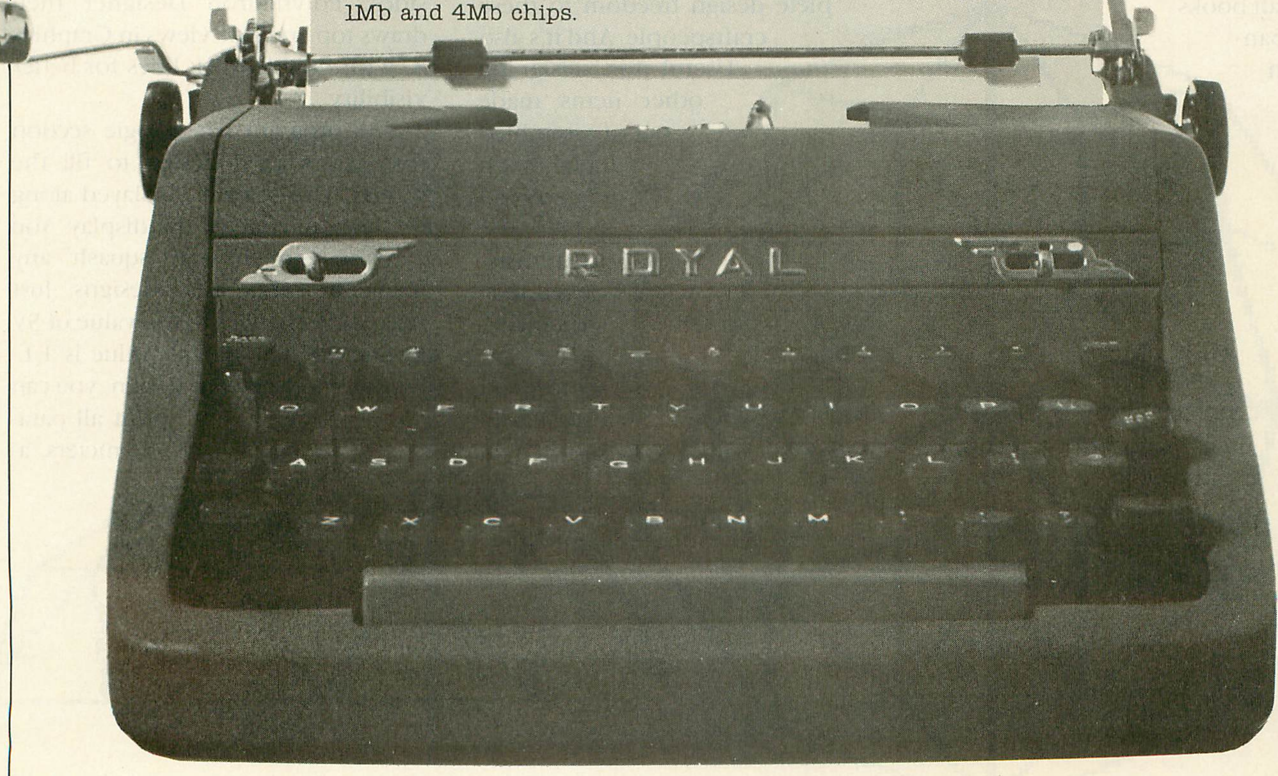
* Because of the DRAM chip shortage, Atari is currently producing a few thousand PC clones a month, but later this year the company will begin making the PC-5, an 80286 AT-compatible computer.

* Atari sent 250 transputers to software developers and the high-powered processing units should be on sale before the end of the year.

Atari's computer division reported a 61% revenue increase.

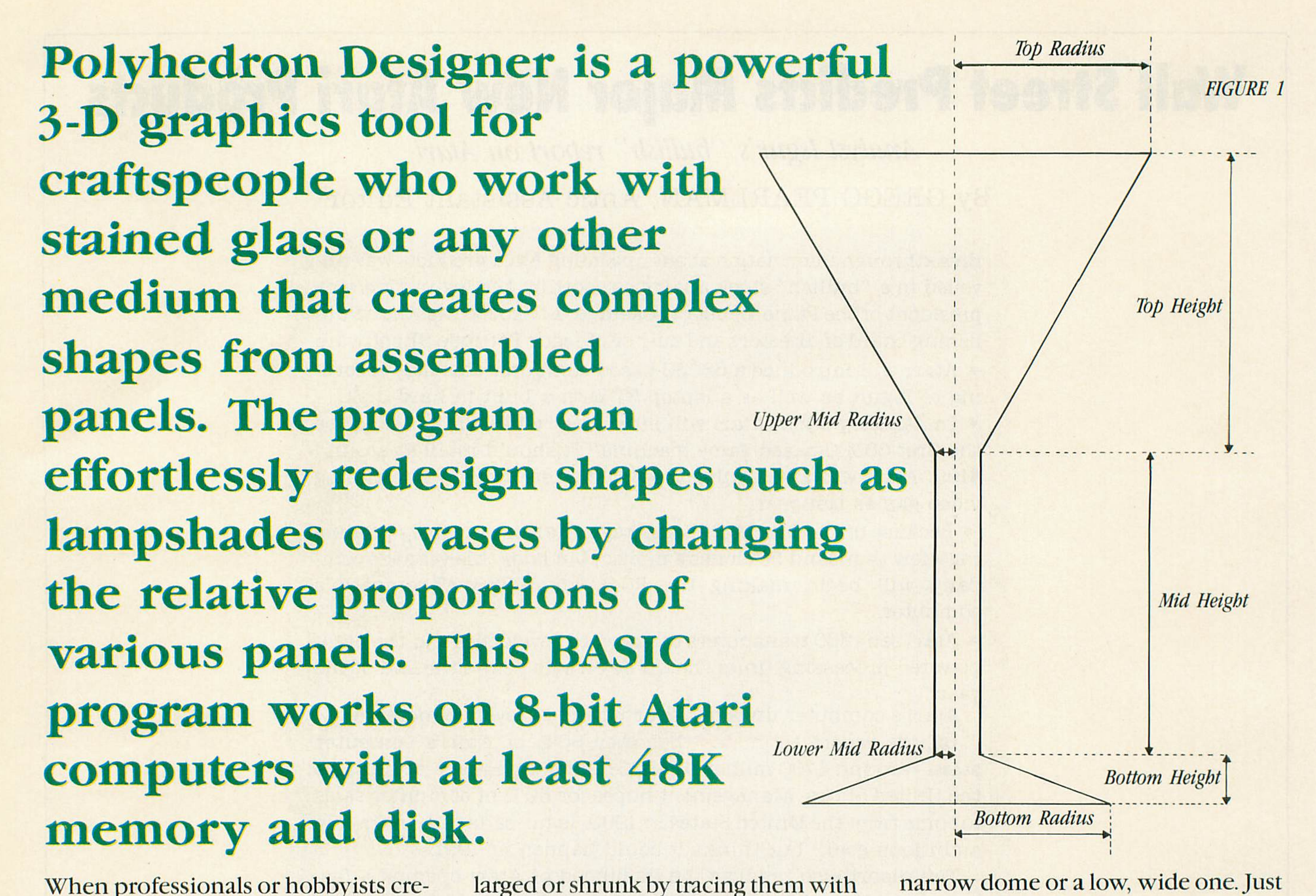
Isgur's report estimates that over 80% of Atari's computer sales—around $400 million to $500 million this year—are outside the United States. Management hopes for 50% of computer sales to come from the United States in 1990. Isgur calls this an "overly ambitious goal," but thinks it could happen in 1991.

The report also predicts the likelihood of Atari opening a factory in the United States to manufacture computers for both home and abroad before the end of the year. (Possible sites mentioned include Nevada and Houston.) Atari is also considering opening a semiconductor plant in Germany that would initially produce 1Mb and 4Mb chips.



Georgia Solkov

Polyhedron Designer is a powerful 3-D graphics tool for craftspeople who work with stained glass or any other medium that creates complex shapes from assembled panels. The program can effortlessly redesign shapes such as lampshades or vases by changing the relative proportions of various panels. This BASIC program works on 8-bit Atari computers with at least 48K memory and disk.



When professionals or hobbyists create stained glass items such as lampshades or vases, they often cut the glass panels by following templates from craft books. These panels can be enlarged or shrunk by tracing them with a pantograph, but the design proportions cannot be altered.

Polyhedron Designer brings complete design freedom to these craftspeople. And it's also Useful for designing other items made out of assembled panels, such as colored plastic fountains, or geodesic structures.

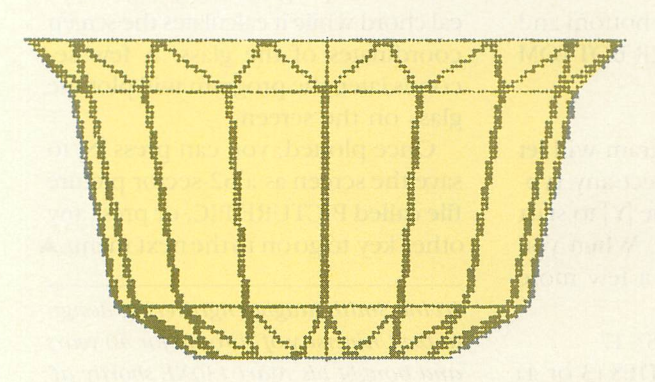
For instance, you can easily plot a tall, narrow dome or a low, wide one. Just answer the program's prompts and type in the dimensions for a three-level polyhedron of as many as 24 sides. Polyhedron Designer then draws top and side views in Graphics 8, with double-thick lines for better visibility.

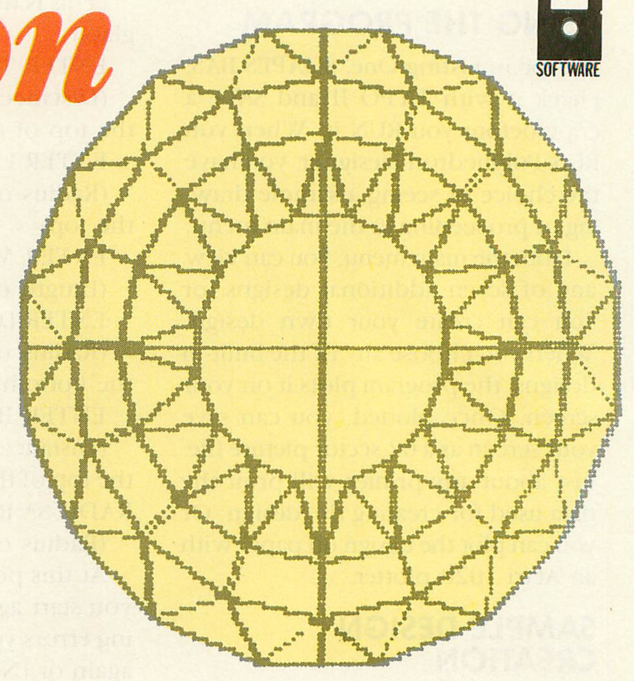
The program has a logic section that scales each design to fill the screen. This scale is displayed along the bottom edge of the display. You can also "stretch" and "squash" any image to create new designs. Just make tiny changes to the value of SV in line 30. The default value is 1.1.

After viewing your design, you can print all parameters, a-

Polyhedron Designer

Power tool for stained-glass designers





BY IRVINE SMITH

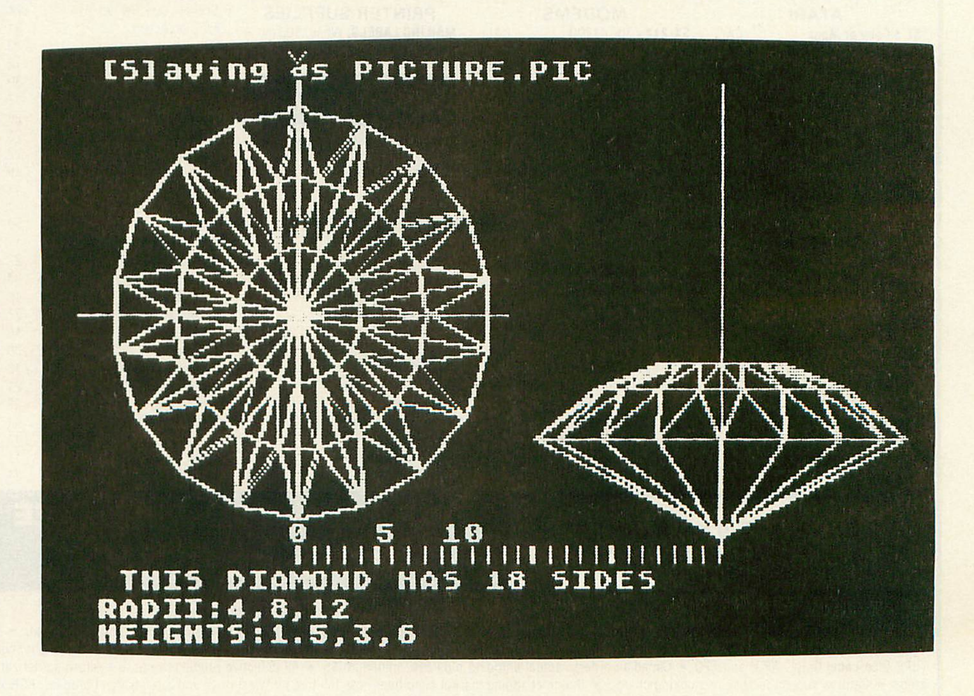
long with descriptions such as good, bad, or 82%. Thus, a design library is quickly generated by altering one or more dimensions between designs. The program includes eight sample polyhedrons to start you off.

You can save your design as a 62-sector picture file called PICTURE.PIC. These files are compatible with Graphics Master and most drawing programs which accept high-resolution pictures. *(Datasoft's Graphics Master hasn't been available for some time. Use* Rapid Graphics Converter *from the November 1985* ***Antic*** *to convert Polyhedron Designer files into any other 8-bit Atari graphic format.*—ANTIC ED)

You can also make hardcopies of your designs with the old Atari 1020 Plotter. These will automatically be scaled to fill the narrow paper width, but you'll get the side view only.

Polyhedron Designer is limited to a three-level polyhedron for simplicity. But more levels are possible by "stacking" two or more designs. Just change the scale of one of the larger designs so that both pieces will fit together after being plotted. Change the number 1 in line 195 to a smaller number such as 0.85 to make your design smaller.

When one level has three-sided panels, the polygon points on the top surface are rotated. If two levels have three-sided panels, the points are rotated back again and a second design can merge with the two-level design. A level can be suppressed by making the radius and height equal to zero. Or one radius can be zero, bringing the polygon to a point. See *Figure 1* for examples of the various measurements within a polyhedron.



USING THE PROGRAM

Type in Listing One, SHAPES.BAS, check it with TYPO II and SAVE a copy before you RUN it. When you RUN Polyhedron Designer, you have the choice of seeing a sample drawing or proceeding to the main menu.

From the main menu, you can view any of seven additional designs, or you can create your own design. When you choose any of the built-in designs, the program plots it on your screen. Once plotted, you can save your screen as a 62-sector picture file. Just about any printer will print the data used for creating the design. Or you can plot the design on paper with an Atari 1020 plotter.

SAMPLE DESIGN CREATION

Let's make a simple cocktail glass. Select menu choice 1, CREATE NEW DESIGN, and type the dimensions of the glass, as shown below:

ENTER TOP RADIUS? 10

(This is the radius of the top of the glass)

ENTER TOP HEIGHT? 10

(Distance between the bottom and the top of the bowl)

ENTER UPPER MID RADIUS? 0.5

(Radius of the stem, measured at the top)

ENTER MID HEIGHT? 10

(Length of the stem)

ENTER LOWER MID RADIUS? 0.5

(Radius of the stem, measured at the bottom)

ENTER BOTTOM HEIGHT? 2

(Distance between the bottom and the top of the base)ENTER BOTTOM RADIUS? 10

(Radius of the base)

At this point, the program will let you start again and correct any typing errors you made. Type [Y] to start again or [N] to continue. When you continue, you'll answer a few more questions:

ENTER NO. OF SIDES? 17

ENTER NO. PANEL SIDES (3 or 4) BOTTOM? 4

ENTER No. PANEL SIDES (3 or 4) MID? 4

ENTER No. PANEL SIDES (3 or 4) TOP? 3

(Polyhedron panels can be three- or four-sided on each of the three levels)

ENTER A NAME FOR IT (ex. PLANTER)? GLASS

Once more, the program will let you correct any typing errors you may have made in the previous set of questions. Type [Y] to start again or [N] to continue.

Now the program will play a musical chord while it calculates the screen coordinates of the glass. A few seconds later, the program will plot the glass on the screen.

Once plotted, you can press [S] to save the screen as a 62-sector picture file called PICTURE.PIC, or press any other key to go on to the next menu.

Irvine Smith taught engineering design at the University of Toronto for 40 years and bought his Atari 130XE shortly after retirement.

Listing on page 72



BY KEVIN SHERRATT

ACTION! Toolbox

Lightning-fast command finder

Two powerful and widely useful routines for the ACTION! programming language. These programs work on all 8-bit Atari computers of any memory size, with disk or cassette. The ACTION! cartridge from ICD/OSS is required.

Whether you're using ACTION! to build "The Wizards of Zondar" or "The Ultimate Chef's Companion," your programming toolbox will be incomplete without a procedure that removes individual words from a string you've entered—and a procedure that compares those words with a list of known words in hopes of a match.

For efficiency and versatility, the following two procedures fill the gap nicely and can easily be customized by experienced ACTION! programmers.

1: WORDFIND

This procedure strips each Word, one at a time, from String—which is a global **BYTE ARRAY** similar to a BASIC string variable. In the process it discards the spaces between Words, no matter how many times you pressed the [SPACEBAR].

In its first loop, **Wordfind()** searches String for a non-space character, incrementing the Index into the array as it goes. Upon finding one, it stores the Index value in Start. The next loop searches for a space—and the end of the Word—while continuing to increment Index.

When another space or the end of the array is found, the procedure writes the characters between Start and Index into the global Word. Since Index, too, is a global variable, calling **Wordfind()** again will result in the next consecutive Word. Therefore, Index must be set to 1 before each new string is examined.

2: MATCHUP

In most applications, after you isolate a single Word you'll want to check it against the commands with which your program is prepared to deal. **Matchup()** can help you here.

This procedure requires that each global List of commands contains only elements of the same length. For example:

```
Comlist1 = 'EAST WEST
   NORTH SOUTH".
Comlist2 = 'EAWENOSO"
```

In Comlist1 the Increment is five—meaning that a new command begins every five characters. Comlist2 has shortened those same commands to two characters. In either case, **Matchup()** must be called using three parameters: the potential Command to be compared, the List of known commands and the Increment of the list.

Matchup() then jumps through the list by Increments, searching the first character of each command for a match. Upon finding one, it compares the remaining characters. If all the characters match, it alters the global variable Match to show where in the list the command was found.

For example, after calling **Matchup(Word,Comlist1,5)** you find that Match=6. You then know that "Word" matched the command beginning at character 6—in this case, WEST.

Matchup() will not search past either the given Increment or a space. Thus, if you call it to examine the word WESTERLY against Comlist1, Match would still equal 6. If no match is found, Match will equal 0. As a global, Match can be used in any number of procedures, but it is always reset by the next call to **Matchup()**.

CALLER EXAMPLE

Carefully type in Listing One, TOOLBOX.ACT, and store a copy to disk before you compile and run it.

The sample **Caller()** procedure shows you how to use **Wordfind()** and **Matchup()**. In this example, Comlist, the command list, is "DOG CAT COW MULE". When run, the program asks you to type one of the four Words in the command list. Then the program finds the Word in the command list and prints the word and its position in the string.

Kevin Sherratt is a full-time science fiction writer and part-time programmer from London, Ontario. He is currently working on an 800XL text adventure game. This is his first appearance in **Antic**.

Listing on page 77

CHOOSE YOUR FREE GIFT!



Subscribe to ANTIC and get The Best of ANTIC Disk FREE!

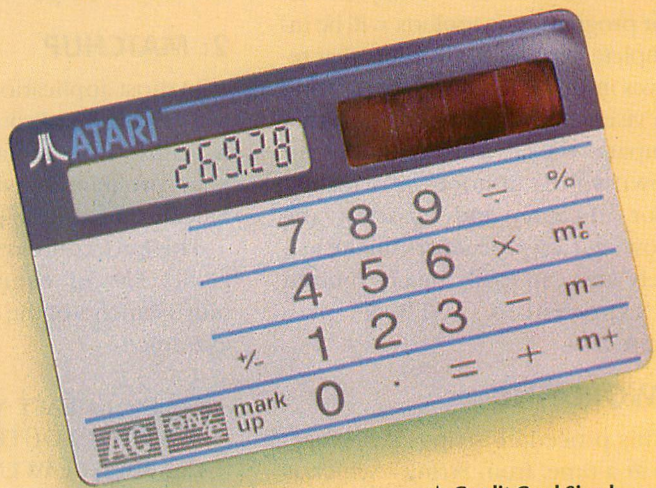
- Bannertizer-Print giant text posters
- Diskio Plus–Turbo operating system
- Rapid Graphics Converter–Translates ALL pictures
- Fader II–Flashy desktop video
- Son of Infobits–Easiest database
- Plus many more of the most popular ANTIC programs–All on one Disk!

Every issue of ANTIC brings you news of software for Business, Personal Productivity, Graphic Arts, Programming Tools, Education and more…

OR…

Subscribe to ANTIC plus Disk and we'll send you this Atari Mini Card Solar Calculator, a $5.95 value, absolutely FREE! Plus every month with your magazine you'll receive a disk loaded with programs like:

- 3D Wire Frame
- Memory Improver
- Banner Creator
- Modem Checkers
- ST Concentration
- ST Battleship Combat



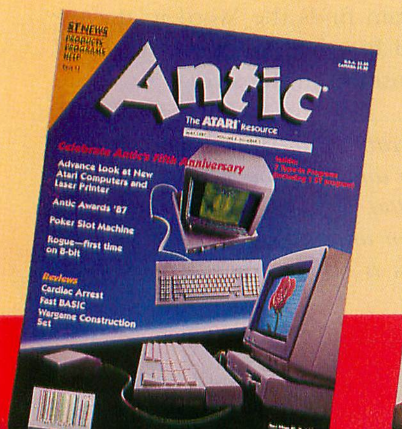
★ Credit Card Sized
★ Instruction Booklet Included

Only in ANTIC—

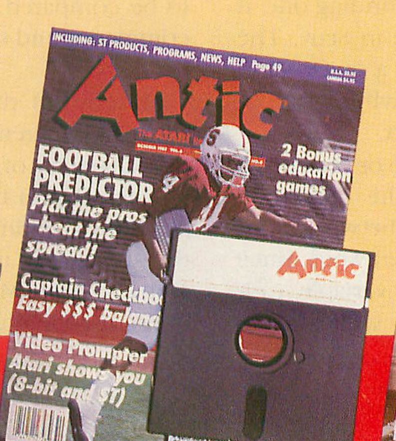
Your #1 ATARI Resource.

Subscribe by phone—Call 800-234-7001 (6am–6pm PST.)

MasterCard and VISA Only.









FA-ST Hard Disk

ICD's smooth 20Mb for 8-bit or ST

2

Reviewed By
MATTHEW RATCLIFF

Add a hard disk to your computer for the first time and you will experience a whole new world of turbo computing you never thought possible—especially on your 8-bit Atari. ICD's Multi I/O board (reviewed in April 1987 **Antic**) connects to an external hard disk drive and controller. I finally decided it was time to improve my 8-bit productivity and ordered ICD's 20-megabyte **FA-ST** hard disk ($699).

For 8-bit owners, ICD uses the latest version of SpartaDOS 3.2d to preformat the hard disk into two 10Mb partitions. You can also request a different partition set-up if you order your FA-ST direct from ICD. If you don't already own SpartaDOS, you may want to buy the SpartaDOS Construction Kit to get all the utilities and complete documentation. Other disk operating systems will work, but SpartaDOS seems to be the only logical choice because it doesn't limit your access to the hard drive or Multi I/O in any way.

The ST version of the FA-ST hard disk should be fairly easy to find in stores carrying ICD products. But if you want the 8-bit Atari version, you'll probably need to order it directly from ICD. And if you don't own a Multi I/O yet, it might be tough to find the 1Mb version. Until high RAM chip prices come back down, ICD is only producing the 256K Multi I/O ($239.95) and selling it direct. (You might also want to look into Supra's 20Mb hard disk for 8-bit Atari. Like the FA-ST, the SupraDrive also retails at $699—but it does not require the Multi I/O.)

A generously long interface cable — $25 if bought separately—comes with the hard disk. ICD also sells hard disk kits for hackers to build. A complete FA-ST hard drive comes with a one-year parts and labor warranty. The kits have a 120-day warranty.

When my FA-ST drive arrived, I connected it right away. I powered up the Multi I/O, then the hard disk. It whirred to life, unparked the heads and was ready in seconds. Next I powered up my trusty 800XL and the system was fully turbo-charged. I immediately went to DOS and found a directory of a few files, SpartaDOS version 3.2d and over 40,000 free

double density sectors!

Switching to the other partition—just another disk drive as far as the computer is concerned—I found another copy of SpartaDOS and another 40,000 free sectors. Using the Multi I/O's drive remapping capability, I can easily boot from either partition, from any Multi I/O RAMdisk with SpartaDOS, or either of my floppy drives.

The first step was to configure my Multi I/O and then save that setup to the hard drive. Now, whenever the hard drive is booted, the configurations of the Multi I/O RAMdisks, floppy and hard drive maps are automatically loaded from the hard drive. Next I copied to the main directory all my favorite SpartaDOS utilities from the SpartaDOS Construction Set, FlashBack and Toolkit disks. From there I began creating subdirectories. For example, My CODE subdirectory contains more subdirectories called BASIC, MAC65, ACTION and RATWARE.

SpartaDOS is limited to 128 files per directory, regardless of disk space. A subdirectory name counts as one filename. If you load up the main directory of your FA-ST hard drive with 128 files, it will appear "full" to your system, even if you have 9Mb of disk space left.

However, this is easily circumvented with subdirectories. You will have to learn to manage subdirectories with the SpartaDOS commands ?DIR, CREDIR, DELDIR, CWD and TREE. The WHEREIS.COM utility in the SpartaDOS Toolkit is a must for hard disk users. It is also important to have a logical organization to your subdirectories, as well as frequent backups.

The SpartaDOS X Cartridge (SDX) should be out by the time you read this—it may allow as many as 1,000 files per directory! So if you don't care much for subdirectories, SDX could be the answer. ICD assured me that switching over from SpartaDOS 3.2d to SDX will *not* require reformatting the hard disk or floppies.

The FA-ST hard drive comes in a heavy metal case, closely matching the color of the XE/ST product line. It has the FA-ST ICD logo on the front in a pattern similar to the function keys of the ST. Its width just matches that of the ST monitors, and there are some heavy-duty screws in the bottom front of the FA-ST unit that can be adjusted to tilt the hard drive and monitor sitting on top for a more comfortable viewing angle. The FA-ST also has a small, quiet fan to keep it cool.

The FA-ST chassis has the room and power to support dual hard drives, so you can expand it later on. The FA-ST is sold in single configurations as 20Mb, 30Mb and 50Mb units, or dual 40Mb, 60Mb and 100Mb. For ST owners, ICD has provided a built-in clock with battery backup. But the 8-bit Atari needs ICD's R-Time 8 cartridge for automated time-stamping.

Average access time (common measurement of hard drive performance) is 60 milliseconds for the 20Mb and 30Mb units. The average access time for 50Mb drives is 35 milliseconds, pretty quick by today's standards.

For ST owners, the FA-ST provides both DMA and SCSI ports. The FA-ST can be daisy-chained with other hard drives such as the Atari SH204 or Supra, along with the Atari laser printer, which also connects to the DMA bus. The SCSI port is used for the 8-bit Atari Multi I/O Board connection, but ST owners can also use it to daisy-chain hard drive expansion to other SCSI-standard hard drive interfaces.

Documentation begins with 8-bit Atari notes indicating proper connections and the current configuration. If you want to change to different hard disk partitions, the included format utility is described. You can park the heads for safety with the PARK_AD utility. This isn't necessary every time you turn off the drive, but it should always be done before moving the unit. The 50 megabyte FA-ST drives automatically park and lock the heads. The documentation provides an excellent introduction to hard drive use in general. A copy of the manual for the Adaptec hard drive controller used in the FA-ST is also provided. But you really don't need much documentation with a hard disk. Once it is hooked up and bootable, you just use it.

The FA-ST hard disks for the 8-bit Atari and the ST are virtually identical. There's one jumper inside the unit that must be changed to convert between the two systems. The formats are not the same, however, so you cannot share the hard disk between the 8-bit and ST. But if you decide to move to the ST from the 8-bit Atari, you can certainly take the FA-ST hard disk along.

If you want to move up to some serious computing power on your 8-bit Atari, the FA-ST hard drive is a complete package that's ideal for a bulletin board system. My own FA-ST has proven to be a great performer that really helps me organize all my projects. ▲

The first step was to configure my Multi I/O RAM and then save that setup to the hard drive. Now the Multi I/O RAMdisks, floppy and hard drive maps are automatically loaded from the hard drive.

FA-ST (20Mb hard disk)
ICD Inc.
1220 Rock Street
Rockford, IL 61101-1437
(815) 968-2228
For ST, or 800XL/130XE with Multi I/O
$699

Cross Town *Crazy 8*

8-bit vs. ST via modem

Reviewed By DAVID PLOTKIN

Cross Town Crazy 8 is an old card game with a new twist. Not only can you play against the computer, but you can even call a friend and play a game via modem!

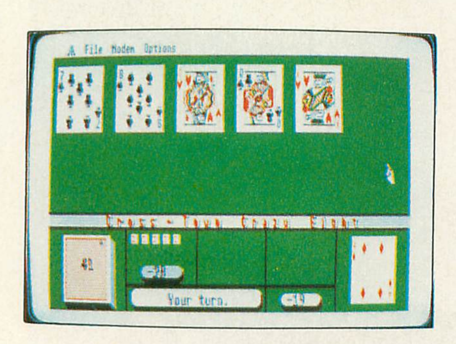
In the crazy eights game each player is dealt five cards from a standard deck. One card is placed face up. Each player must then play a card which is either the same suit or the same rank as the "up" card. If you can't play a card, you must either draw a card from the balance of the deck, increasing the number of cards in your hand—or pass, if you already hold 12 cards or if there are no more cards to draw.

The object is to get rid of all your cards, so drawing more cards from the deck is obviously not a good thing. If you are the first player to empty your hand, you receive points equal to the remaining cards held by all opponents.

Why is it called "crazy eights?" Because the eight can be played on any card and you can declare any suit you want the eight to be. A certain amount of strategy is needed as well as some luck, and the computer is a pretty good opponent.

The 8-bit version of Cross Town Crazy 8 is easy to play. A card-sized cursor is moved around the screen with the joystick. To select a card, just press the joystick button, move the cursor to where you want to place the card and press the button again. Unfortunately, the 8-bit graphics are poor. Not only are *all* the suits drawn in black, but placing the cursor on a card and pressing the button to select it renders the card almost invisible!

Another 8-bit problem is that if you don't release the joystick button fast enough, it reads multiple button presses. So if you are drawing cards, you can end up with a handful of cards real quick! Since there is NEVER



The most unusual feature of Cross Town Crazy 8 is that you and a friend can play by phone—

any time you would want multiple presses of the fire button, this aspect of the program should be fixed.

The 41-page manual intermixes instructions for both the 8-bit and ST versions, instead of having two separate sections, Also, the screen descriptions don't match the illustrations for the ST version.

On the ST, Cross Town Crazy 8 is fully GEM-driven and very easy to learn, utilizing menus and the mouse. It works on color or monochrome monitors or TV. The ST screen is divided into sections, with your cards visible at the top of the screen. The "up" card, remaining deck, your opponent's number of cards and scores, and your score are also shown.

Click on the card you want to work with, then click on the destination. Using the menus, you can quit at any time, get information about the game, save the game in progress and load a saved game. (Most of these functions are not available on the 8-bit version.) The graphics are sharp and the sound of dealing and playing cards are quite realistic. The "speed up" mode lets you turn off the sound and speed up the game considerably.

MODEM CRAZY 8

The most unusual feature of Cross Town Crazy 8 is that you and a friend who both have a modem and a copy of the game can play by phone. (With the 8-bit version, you need an Atari 850 interface, ICD's P:R: Connection, or an equivalent.) Cross Town Crazy 8 will dial a Hayes-compatible modem for you, answer an incoming call, or auto-answer a call.

Your opponent's moves are mirrored on your screen, and you can send short messages back and forth. You can also put the game on hold temporarily and send lengthier messages—a nice touch. Cross Town Crazy 8 is copy-protected, but you can make a copy to give to a friend so that the two of you can play. This copy will only work if it answers the modem, you cannot use it to play by yourself or originate the call.

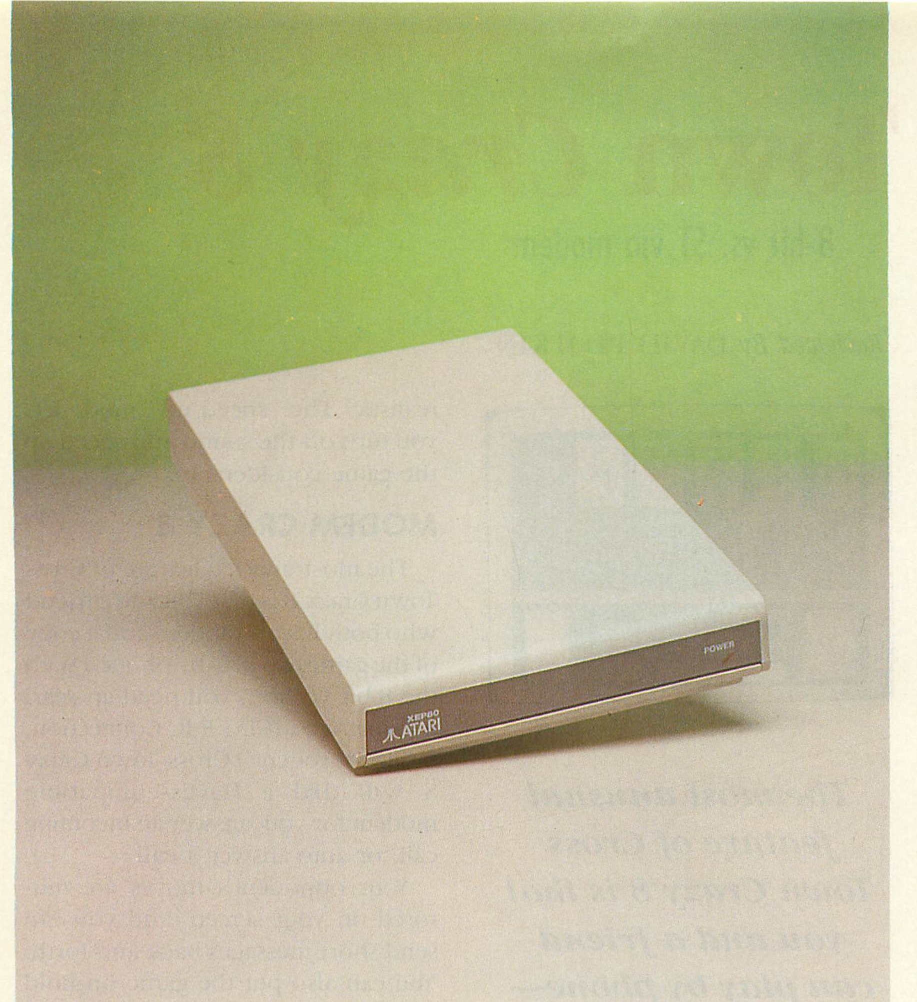
I have two complaints about Cross Town Crazy 8. First of all, some of the ST alert boxes appear confused. When the computer wins a hand, it states that "You got XX points." When you win, it states that "Player #1 got XX points." Also, according to my rulebook, crazy eights does not permit you to place one eight on top of another one. But Cross Town Crazy 8 not only allows it, the computer opponent uses that trick at every opportunity.

Crazy eights is a simple but entertaining card game, and Cross Town Crazy 8 is an effective Atari implementation of the game. Also, the concept of playing a remote opponent by modem is novel and seems to work quite well.

$19.95. XLEnt Software, P.O. Box 5228, Springfield, VA 22150. (703) 644-8881.



First XEP80 Slide Show





Full 80-column graphics display for 8-bit

BY MATTHEW RATCLIFF

This picture loader is the first published program delivering the full 80-column graphics potential of the Atari XEP80 display hardware. The BASIC Slide Show program—plus several related demonstration listings—works on 8-bit Atari computers with at least 48K memory and disk drive.



At last—real 80-column displays on the 8-bit Atari! But where's the commercial software we need for practical uses of the $79.95 Atari XEP80 board? (Reviewed in the July 1987 **Antic**.) Well, the graphics programs and routines accompanying this article will at least help fill some of the gap until applications like AtariWriter Plus 80 arrive.

XEP80 Slide Show delivers an 80-column display of any pictures originating in the Atari's widely used Graphics 7-1/2 or 8 formats. Assembly language students can obtain the MAC/65 source code for the programs' main USR routines on this month's Antic Disk.

XEP80 BASICS

So let's get started. We'll take a look at some of the XEP80's inner workings and show how to begin putting this fascinating hardware into gear.

Setting up the XEP80 box couldn't

be simpler. Just use the provided RCA cable to connect the XEP80 to the monitor. The XEP80 plugs into any 8-bit Atari via either joystick port 1 or 2. Now boot the software that comes with the XEP80, turn on the power and you have a full 80-column display.

The handler software for the XEP80 fills less than 2K memory, but is quite powerful. The manual is a good general reference and the technical documentation is very helpful for digging into this smart little box.

The XEP80 requires a special program that replaces the E: and S: handlers built into the Atari operating system. This comes in the form of an AUTORUN.SYS file on an included Atari DOS 2.5 boot disk. The disk also contains complete source code for the XEP80 driver and full in-depth technical documentation

The XEP80 has a printer interface port which is of limited use. Before it can be accessed, the handler must be loaded from disk as an AUTO-RUN.SYS file. Most commercial word processors (except for the original AtariWriter cartridge) just don't allow this.

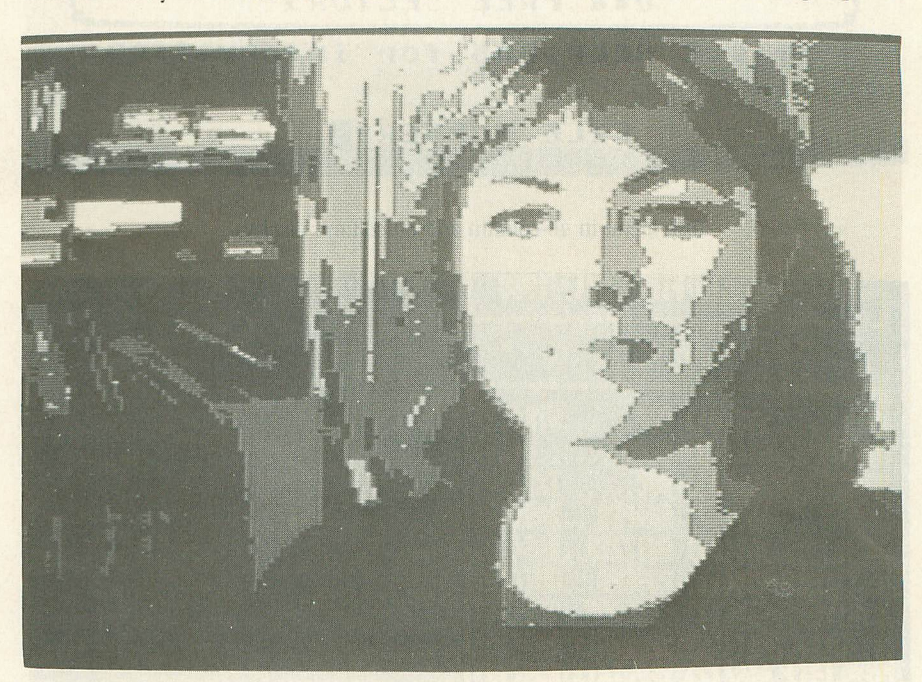
Hooray! You can now edit your MAC/65 or Atari BASIC programs in 80 columns with the XEP80. Any "well-behaved" Graphics 0 application will also work with the XEP80. Specifically, this means any program which doesn't use custom display lists, only talks to the E: device through standard PRINT statements and doesn't manipulate DMA control (i.e. enable the ANTIC chip). Admittedly this is a pretty limited supply, but the XEP80 does support the full complement of character graphics, cursor control and screen editing key commands.

User groups have been receiving "pre-release" versions of AtariWriter Plus 80 this spring, which is at least a hopeful sign that might soon be generally available. However, you can forget about 80-column compatibility with ICD/OSS software such as BASIC XL, BASIC XE, Writer's Tool and ACTION! The same goes for the Lightspeed C editor, which insists on turning on DMA to enable the standard 40-column display. MAC/65 is the only ICD/OSS product which does *not* use high-speed screen memory access for text output. The company's other products circumvent the E: device, so they just don't work with the XEP80.

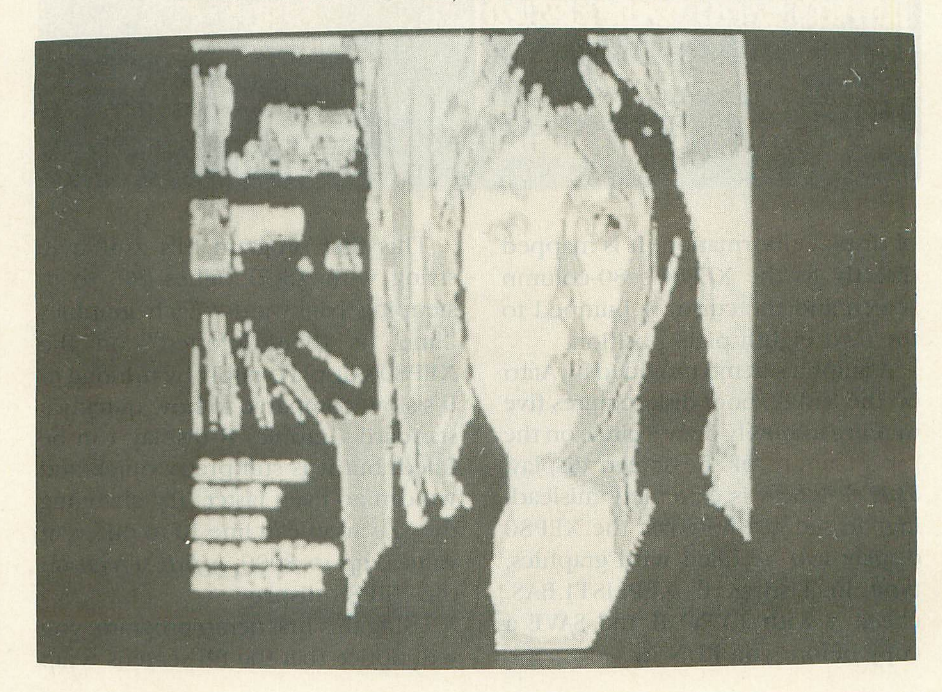
XEP80 GRAPHICS

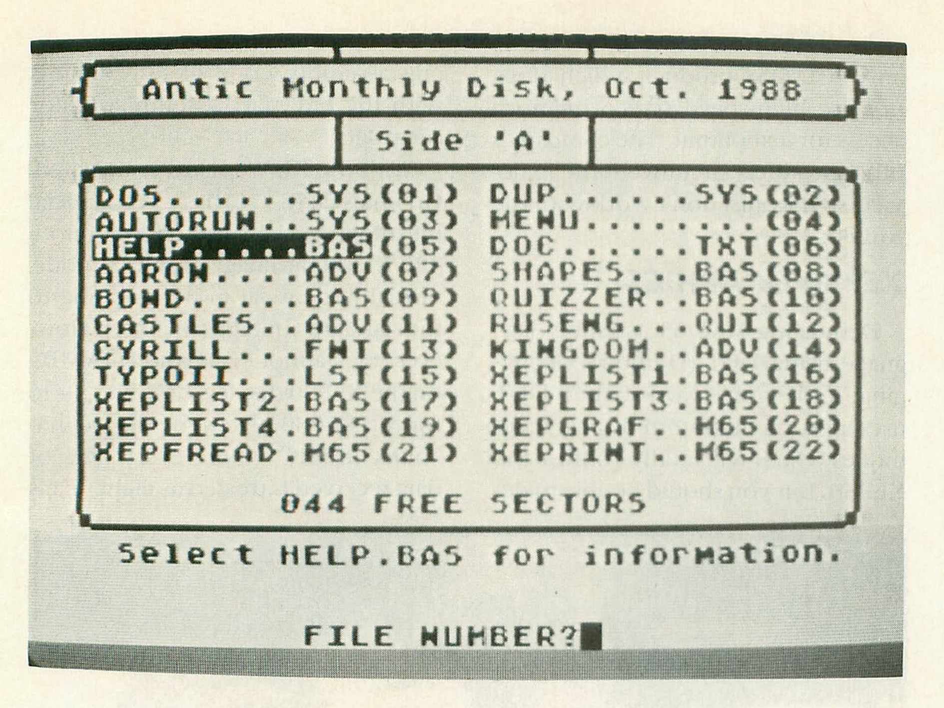
Debugging MAC/65 assembly language using DDT (Dunion's Debugging Tool) won't work either. DDT uses all sorts of custom display techniques which will totally confuse the XEP80. But you should be able to debug assembly code in 80 columns with the old Atari Assembler/Editor cartridge.

With the XEP80 handler installed, Graphics 24 (8 + 16) has a very special meaning. It kicks the XEP80 into a 320 X 200 bit image graphics mode, virtually identical in bit-mapping to the standard Graphics 8 display. However, you cannot PLOT and DRAWTO on the XEP80 display. Graphics 8 + 16 for the XEP80 places the device into "burst mode," where every byte of data received is treated as eight pixels

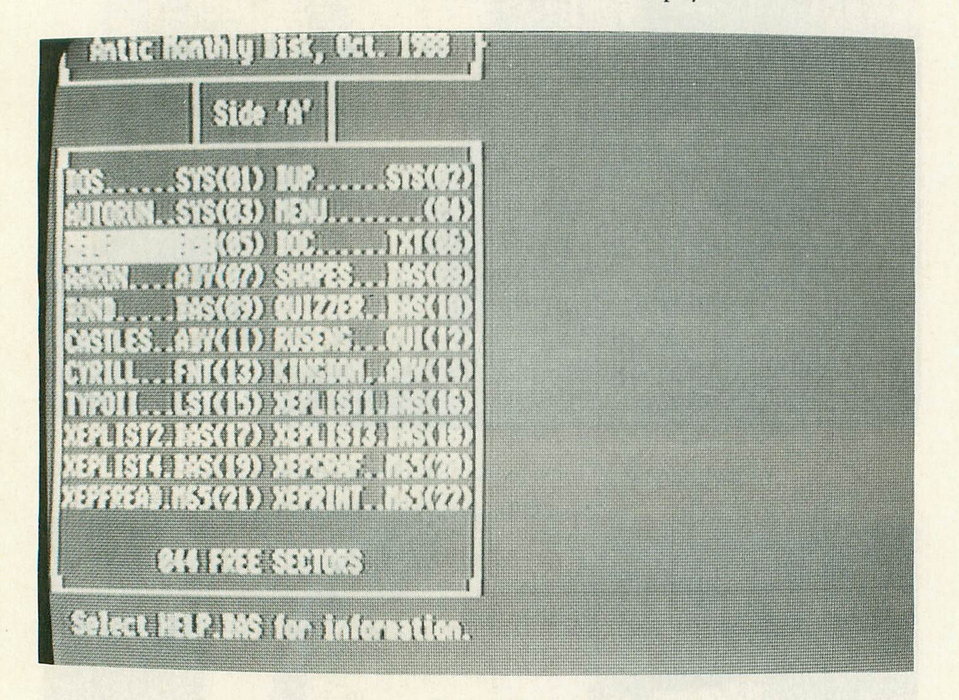


Portrait above is 40 columns, fast 80-column version is below.





Disk menu in 40-column and 80-column displays.



of display information. It is mapped directly to the XEP80's 80-column screen and the cursor is bumped to the next eighth pixel position.

A graphics demo provided by Atari on the XEP80 boot disk requires five minutes to slowly draw a circle on the top quadrant of the screen display. This slowness is extremely misleading. To see just how fast the XEP80 display can be filled with graphics, type in Listing 1, XEPLIST1.BAS, check it with TYPO II and SAVE a copy before you RUN it.

This first program fills a 40-byte string with ASCII values 255 to 0, stepping backwards. Each graphics "line" is then "plotted" on the XEP80's display simply by printing it. It's slow compared to how quickly a standard Graphics 8 display can be filled, but it is still pretty quick and we can go even faster. Try changing the SZ variable in line 10 to different values, up to 8000, a *full screen* on the XEP80 display.

Using this first demo program, you will notice that the fill screens wrap around on themselves from bottom to top. While developing the XEP80 Slide Show program, I tried printing a 7680-byte graphics mode screen (192 lines) to the XEP80, immediately followed by 32 zero bytes (eight more lines). Then I loaded and printed the next graphics screen. It wrapped around to the top of the display as I expected, but was slightly skewed to the left.

I discovered that an additional 32 zero bytes had to be sent to the XEP80 to get a perfect wraparound from bottom to top. This made for an interesting slide show, continuously playing one picture after the next. However, the XEP80 always got skewed again at seemingly random intervals.

Apparently in graphics burst mode the timing is very critical between the computer and the XEP80. Eventually it will lose a byte or two. With no special handshaking in burst mode to detect and correct such errors, your pictures will be skewed again. Currently the only way I know to get things synchronized between the computer and the XEP80 is to issue the OPEN command to E:, which forces the text mode and normal communications.

LOADER LISTING

Now type in Listing 2, XEPLIST2.BAS, check it with TYPO II and SAVE a copy before you RUN it. The XEP80 Slide Show is a simple Graphics 8 viewer program that also lets you load uncompressed Micro Illustrator pictures (compatible with KoalaPad, Atari Touch Tablet, Suncom Animation Station, etc.). The "colors" appear as patterns, so the pictures may not look all that great, depending on color selections and shading techniques used in the original image.

When you RUN this program, you'll be prompted for a directory search specification, such as D1:*.MIC. A directory of all files matching your selection is listed to the screen. Next, enter the filename you want to LOAD, or press [RETURN] to enter a new directory specification. You don't need to specify a drive or extender. The 62-sector picture file is then loaded and displayed. Press [RETURN] to select a different file to

view.

Two separate USR routines are employed. The first is in string XFREAD$, initialized in the subroutine beginning at line 30000. It accepts pointers to a filename string and a graphics buffer string. This USR routine attempts to open the file and read the graphics data into the buffer.

The next step is to get the string displayed on the XEP80 while in the graphics mode. The second USR routine is in XEPGRAF$, beginning at line 25000. It accepts the address of the graphics buffer string and does a binary record PUT of this size to the E: device—the fastest way possible to send the XEP80 all that data. The XEP80 handler does the rest.

DUAL 40/80 COLUMNS

Here's a special XIO command that shows a 40-column display while the XEP handler is in use:

XIO 25,#6,12,0,"E:"

If you have two monitors side by side, you can do many interesting things with dual displays. When the 40-column display is on, absolutely no communications to the XEP80 can be carried out. No PRINT statements to the screen may be used. To turn off the 40-column display and resume communications with the XEP80, use the following command:

XIO 24,#6,44,0,"E:"

Any software that uses the 40-column display must write directly to screen RAM. Here's an example of how easy it is to use two different displays with the 8-bit Atari. Type in Listing 3, XEPLIST3.BAS, check it with TYPO II and SAVE a copy before you RUN it. You'll be prompted on the 80-column display to prepare to view the 40-column screen. After you change any connections, if necessary, press [RETURN]. The 40-column display is enabled and the screen RAM is POKEd with random values.

Don't press [BREAK] while this display is on, or the XEP80 will get very confused—but it would recover on [RESET]. Exit the program at the next 80-column display prompt. Make sure to use a PRINT CHR$(125) command to clear the XEP80 display instead of the usual GRAPHICS 0, which the XEP80 handler simply ignores.

Listing 4 puts this dual display technique to good use, showing a 40-column disk directory. Type in Listing 4, XEPLIST4.BAS, check it with TYPO II and SAVE a copy before you RUN it. The USR routine beginning at line 20000 is placed in XEPRINT$. It requires the X and Y coordinates (in Graphics 0) and the address and length of a string. It will convert the string from ATASCII to screen RAM format and place it in the 40-column display memory at the specified position.

The clear screen character (ATASCII 125) will be interpreted properly and clears the 40-column display. It also handles the carriage return character and can work with strings up to full screen size, so you can format an entire page of text and display it with one USR call.

Note that the [RETURN] character positions the cursor at the next line using the same X position that was originally specified, acting as if that were the left margin. This is ideal for aligning columns of text. The XEPRINT$ USR routine does not check to see if your text will print past the end of the display, nor does it scroll the screen. Your BASIC program can keep track of the vertical cursor position easily enough. ▲

Atari's XEP80 graphics demo takes five minutes just to draw a small circle!

XEP80
(80-column hardware)
Atari Corp.
1196 Borregas Avenue
Sunnyvale, CA 94086
(408) 745-2000
$79.95, 16K disk

Listing on page 70

Matt Ratcliff, longtime **Antic** Contributing Writer, answers 8-bit technical questions on ANTIC ONLINE. Just type GO ANT-3927 when you log onto CompuServe.

XEP80 MONITOR MATTERS

As **Antic's** original XEP80 review in July 1987 pointed out, you need a good composite video monitor capable of 80 sharp columns in order to see what the XEP hardware is truly capable of. I tried to use the XEP80 with my old Commodore 1702 color monitor. It almost worked, but the 1702 didn't quite have the bandwidth needed for 80 columns. A line of text at the top and bottom of the display and some characters at the left edge were chopped off.

You could move up to the $300 Commodore 1802, the 80-column version developed for their C128. However, your best bet would be to get an inexpensive 80-column composite video monochrome monitor sold for as little as $50 by mail order companies. Unfortunately these are now somewhat hard to find, because most monochrome monitors these days have TTL interfaces, specifically for IBM PC compatibles.

The May 1988 issue of the San Leandro Computer Club (SLCC) Journal published a tutorial article by Bob Woolley, about modifying the XEP80 for TTL monitors. It looks like a fairly simple project for experienced hardware hackers.—MATT RATCLIFF

2 Inexpensive

Star NX-1000

STAR NX-1000

Star Micronics dot-matrix printers previously reviewed by **Antic** were well-designed and easy to use. Star shouldn't have strayed from the path of the NR-10 (**Antic**, July 1988) and NL-10 (January 1987), but it did with the **NX-1000**. Some mail order companies sell the NX-1000 for less than $170 dollars. But even at that excellent price, I think the NX-1000 has too many physical quirks.

The top cover of the NX-1000 goes on and off opposite from what you'd expect and the rear cover can be difficult to remove and replace. This makes it hard to load fanfold paper, which must carefully hand-fed until it catches in the platen. I also had trouble with fanfold paper popping out of the NX-1000's sprockets, resulting in oddly angled printouts or bunched-up paper jams.



Unlike other Star printers **Antic** has tested, the NX-1000 wastes a sheet of fanfold paper between printouts. You must either tear off your printout about an inch from the bottom—or do the same thing on the next blank sheet. Also, the NX-1000 ribbon cartridge is different from the one used in the previously mentioned Star printers. Like virtually all printers not specifically made for the 8-bit Atari, the NX-1000 requires a parallel interface such as ICD's P:R: Connection or the Atari 850.

On the plus side, you can select several type styles with the aid of just two buttons on the control panel. The Print Pitch button has settings for pica, elite, condensed and proportional print, as well as combinations of these—six types altogether. The near letter-quality (NLQ) button has settings for Courier, Sanserif and Orator NLQ styles, as well as italic variations of each, plus NLQ off—a total of seven NLQ options.

Courier NLQ is the same typeface found other Star printers and is similar in quality. Sanserif is an "NLQ version" of the draft-quality typeface and Orator is another sans-serif type of font. In fact, depending on how you set your printer's easily accessed DIP switches, there are two types of Orator available—large and small uppercase, or uppercase and lowercase—extending your typeface possibilities even further. Graphics printouts on the NX-1000 were fairly dark and even.

The NX-1000 has about average speed. It printed a 20,000-character file at 79 characters per second (cps) in pica draft mode and 91 cps in elite draft. NLQ printing had to be timed with a sundial rather than a stopwatch—19 cps. Printouts of DEGAS pictures on the ST each took between two minutes, 52 seconds and three minutes, 16 seconds.

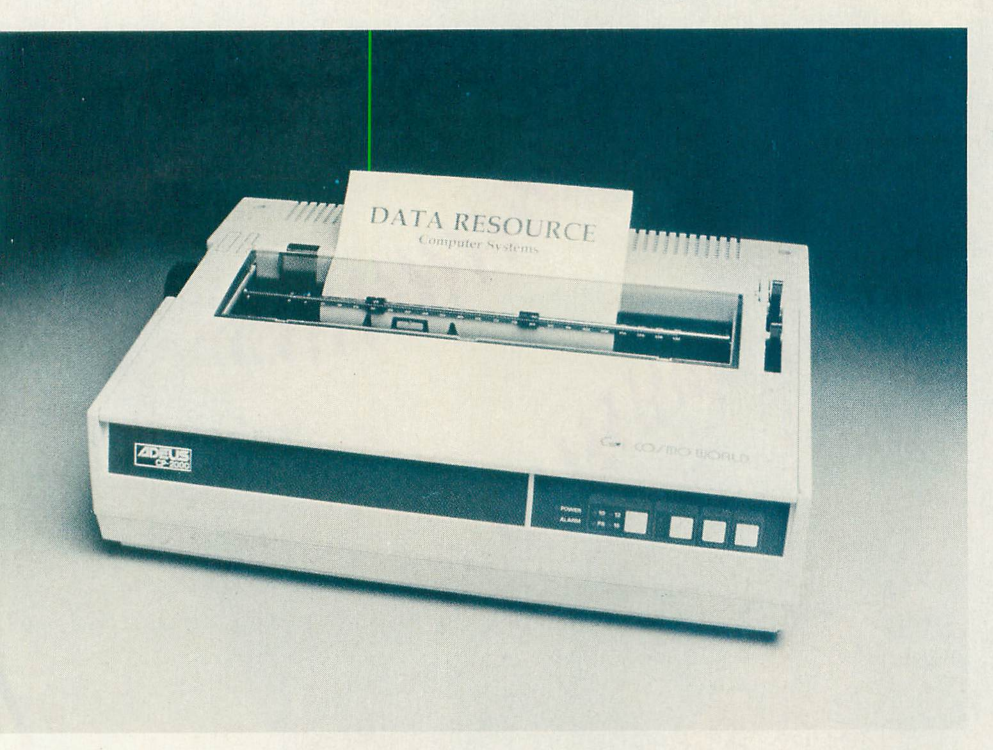
The NX-1000 is somewhat quieter than other Star printers tested, although the noise level when it printed graphics made it difficult to hold a telephone conversation nearby.

The manuals for the NL-10 and NR-10 were much easier to follow than the NX-1000 documentation. But the NX-1000 manual is still as complete as you could hope for—112 pages of information along with a quick reference card for front panel control and a six-page tearout section featuring printer command codes, DIP-switch functions, etc.

The NX-1000 is far from a bad printer. For the low street-price, it really does a lot. But personally I feel that the negatives are about neck and

Printer Finds

Adeus CP-2000



neck with the positives.—GREGG PEARLMAN

$289. Star Micronics, Inc., 3 Oldfield, Irvine, CA 92718. (800) 537-8270.

ADEUS CP-2000

When I saw an advertisement in my local paper offering a daisy-wheel printer for less than $250, I could barely believe it. For about what I had paid for my Epson RX-80 dot-matrix, I could buy a Diablo 630-compatible letter quality printer. So I called Data Resource in Seattle and asked the obvious question, "Why so cheap?" They said that the **Adeus CP-2000** printer was discontinued after introduction of a faster model.

I received my printer in only three days! The CP-2000 took longer to unpack than to set up. The cable that connected my Epson plugged right into the parallel port on the back of the Adeus (which also has a serial port).

The software I regularly use didn't seem to care that I changed to a daisy-wheel Adeus. The only difference was that the text printouts looked about 100% better—nice, clean and crisp. (*Our freelance reviewer tested this printer with his ST. The CP-2000 should work equally well with an 8-bit Atari equipped with an interface such as ICD's P:R: Connection or the Atari 850. However,* ***Antic*** *does not currently have a CP-2000 for verifying these results.*—ANTIC ED)

Within minutes of changing the printer drivers for Regent Word II, VIP Professional, TimeLink and ST Writer, I had beautiful printouts. Of all the software I tried, Regent Word was the easiest to modify for the Diablo print commands and 1st Word the most difficult.

When I got my hands on WordPerfect, I installed the Diablo 630 driver that comes with the program and it worked fine. In fact, WordPerfect brought out features I didn't know I had, like double underlining, underlining between words, and some of the symbols that other programs didn't know about, such as copyright, trademark and paragraph.

The printer came with a prestige elite "ASCII" print-wheel that neatly snaps into place. I didn't like the way the apostrophes took up a full character width so I purchased an additional "word processing" pica wheel that proportions punctuation much better. Print wheels and ribbons are also compatible with the Diablo 630 and are quite common, so finding parts should not be a problem. I have used the Adeus CP-2000 for over three months and encountered no problems.

But while the CP-2000 print quality is super, printer speed is a shock. A full-page printout that takes just a few seconds on my Epson RX-80 requires almost a minute on my Adeus. The noise level is a bit higher than a dot-matrix, but the Adeus has a well insulated case.

I use the CP-2000 judiciously—usually at the end of the day for final drafts and correspondence. The Adeus obviously won't do screen dumps or graphics output, but for true letter quality at a low price I can't think of a better printer for Atari owners.—MARTIN BROWN

$247. Data Resource Computer Systems, 900 N.E. 64 Street, Seattle WA 98115. (206) 523-3283.


EASY
SCAN



Easy-Scan

Affordable image scanning comes to the 8-bit Atari

Reviewed By CHARLES CHERRY

Some much-wanted peripherals are slow to arrive for the 8-bit Atari, but thanks to dedicated companies like Innovative Concepts, they do indeed arrive. The latest of their 8-bit goodies is **Easy-Scan**, a viable image scanner that costs only $79.95.

A scanner examines a piece of paper and stores a picture of the contents in the computer's memory. The results are no different from pointing a video camera at the page and digitizing the camera signal, *a la* Computereyes from Digital Vision. But a scanner does it by passing a small sensor over the page and reading the brightness of each spot.

Easy-Scan uses your printer to move the sensor over the page. You remove your printer ribbon, attach the sensor to the print head, put the image page in the printer and run the software. The program moves the print head back and forth and advances the paper.

The sensor looks like a long wire attached to a normal Atari cartridge. The wire is actually two fiber-optic light pipes bundled together. One pipe shines a little spot of infra-red light on the page and the other reads the brightness level of the reflected image. The results are surprisingly accurate, providing a 256-level gray scale.

Of course, the results from Easy-Scan are not comparable to those from a $2,000 scanner, but how many $2,000 scanners are available for the 8-bit Atari? Image quality is roughly at the level of the images generated by 8-bit Computereyes.

The Easy-Scan software is very good. Its many settings cover a variety of situations. You can vary the vertical resolution and the horizontal width to determine the size of your final image. You can't get an entire 8 1/2×11 inch page into memory, but you can grab about two-thirds of it.

That brings us to to memory usage. Easy-Scan is a hog. A single scan requires about 60K—that's why it will only work on computers with at least 128K of memory. Since a single Atari screen has only about 8,000 pixels and Easy-Scan apparently uses one byte per pixel (256 levels), I can't imagine what the other 52K bytes are used for.

However, after the image is scanned, you can refine the display in several ways. It can be displayed in either Graphics 8 or Graphics 15 mode. You can set the brightness levels assigned to each Atari color, and you can set the colors of each color register. You can save the picture in the standard 62-sector Micro-Painter format as well the huge 492-sector full information format. Utilities included with the program convert the pictures to other formats—including Micro Illustrator, Fun with Art, and Print Shop—dump them to a printer and display them as a slide show.

How well does Easy-Scan really work? Well, *Figure 1* is an original page from the March, 1988 issue of **Antic**, and *Figure 2* is a screen shot of the Easy-Scan image. Try as I might, I could not get the small print to register. Innovative Concepts is working on reducing the diameter of the light pipes to increase the resolution. The ultimate aim is to have Easy-Scan read bar codes reliably. If they are successful, it will be easy to upgrade the existing units. But, like other low-priced scanners, Easy-Scan is not really an automatic text reader for desktop publishing.

Figures 3 and *4* show that Easy-

Tony Carlson

BIG LETTERS

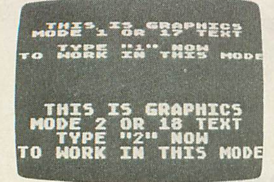
Text for your programs or videotapes

BY JERRY VANDEN BOSCH

YOU CAN HAVE LARGE TEXT IN

GRAPHICS MODES

1, 2, 17 & 18





FIGURES 1 & 2.

Scan is much more successful with pictures than text. The only large pictures I had around were some old 8×10 glossies from my previous life as a clean-shaven actor. The vertical compression, which is evident, can be adjusted, but this was about as close as I could get. My next attempt produced some stretching. I think I look better compressed.

The Easy-Scan program is written in BASIC with machine language subroutines. It's unprotected and LISTable. A determined individual could undoubtedly figure out how to make Easy-Scan do other interesting things, such as display in Graphics 9. Innovative Concepts promises to be helpful to any people who want to add features to Easy-Scan. They are also working on new versions of the software. (I tested version 1.0).

Easy-Scan is a very good package with a lot of potential. Getting the most out of it will requiring some experimentation. The position of the light pipes on the print head is not critical, but some locations work better than others. And then there are the almost endless variations of the software parameters. A little diligence here will pay big dividends. As you climb the learning curve, getting good results from Easy-Scan will become truly easy.

$79.95, 128K XL/XE. Innovative Concepts, 31172 Shawn Drive, Warren, MI 48093. (313) 293-0730, CompuServe I.D. 72237,2252.



FIGURES 3 & 4.

Innovative

Innovative Concepts is the kind of aggressive little company, like ICD or Supra, that has taken over much of the forefront of bringing out exciting new 8-bit Atari products. Best known for its full line of memory upgrades and enhanced keypads, Innovative Concepts' new $79.95 Easy Scan image scanner (reviewed in this issue) is their most technically impressive release yet.

Innovative Concepts president Mark Elliot says, "We can afford to come out with a lot of products because we have a low overhead and we can get a product onto the market within a month or two, when a large company might take more than six months."

Elliot and his business partner, Ron Florka, have been working together for about three years, although the company didn't incorporate until March 1987. The pair met through the MACE Atari users group while Elliot was working in the computer section of K-Mart and Florka operated a "fix-anything" handyman business. "We were among the original officers who formed the MAGIC Atari users group. Then Ron and I started buying broken Atari computers, repairing them, then selling them.

"Later we began coming up with products like memory upgrades—little gadgets that a lot of the big companies don't want to play around with because of the small profit margin. Eventually we started advertising and gradually growing. We're still running Innovative Concepts out of our homes, but it's getting bigger and bigger."

Elliot and Florka both still have full-time jobs, so Innovative Concepts is a "part-time thing" for them. It hasn't reached the point yet where they have an office and get phone calls 24 hours a day. But the many callers who do

Concepts Leads The Way

By GREGG PEARLMAN,
Antic Assistant Editor

reach them are phoning from as far away as West Germany. "People just ask for catalogs of our products," says Elliot. "It's fascinating talking with people all around the world."

IC PRODUCT LINE

Innovative Concepts is working on a 3 1/2 inch disk drive for the 8-bit Atari that lets you put 720K on one disk. It's mostly for people who run bulletin boards or who otherwise need a lot of storage space. "We're playing around with the ROMs in the new Atari XF551 drives, trying to upgrade it to a 3 1/2-inch setup," says Elliot. "So far, it can read about half of the 720K on a 3 1/2 inch disk. Something's holding it back, and we're stumped right now. The drive mechanism is quirky."

But Innovative Concepts has plenty of other products available—all clearly documented. "We try to make installation and assembly instructions very clear," says Elliot, "because too many other companies don't." These products include:

*SIO Port Box ($24.95): a little plastic box with three SIO ports. It should alleviate the problem with dead-end peripherals (which must be the last link in the chain) like the old Atari 410 program recorder or XM301 modem.

*SIO Switch Box ($34.95): hooks up two computers to one disk drive set-up—or one computer to two disk drive set-ups—and switches between them (with the power off, naturally).

*Modem Mouth ($19.95): basically a phone line monitor for modems like the Atari 1030 and XM301, MPP, or less expensive Avatex. It's a speaker for a modem that doesn't otherwise have a speaker.

*Memory upgrades: 256K RAM for the 800XL, 320K and 576K for the 130XE, 128K and 320K for the 65XE, and 128K for the XE Game System. The upgrades for the 65XE and XEGS make these machines fully 130XE-compatible, including the ANTIC enhance mode.

You must call for the latest prices on any of these memory upgrades, due to the rapid rise in chip prices. Memory chips now cost about $11 apiece. "When they were at $3 or $4," Elliot says, "we sold four or five memory upgrades a week. Now we're lucky to get that in a month."

*ICX-85 Keypad ($44.95): this enhanced Atari 10-key number pad is probably Innovative Concepts' best-known product. "It's a good seller and neat," says Elliot. "It's ideal for a database or in DATA statements with a lot of numbers and commas." The Deluxe ICX-85 Keypad ($64.95) is more or less the same thing, except that it has function keys built in.

*ICX-85 kit version ($24.95): for people who have Atari's CX-85 10-key pad already. It includes circuit boards, connections and instructions to convert it over to the Innovative Concepts format.

*IC-1050 Controller ($21.95): gives any Atari 1050 disk drive write-on, write-off and normal modes. It also has a two-color LED, and it works with U.S. Doubler and other enhancements.

*Function Key Kit ($14.95): provides the F1 through F4 function keys found on the Atari 1200XL computer.

*RAM-Aid ($14.95): a coldstart switch for memory-upgraded computers.

*RAM Drive Utility Package ($14.95): a compilation of all the RAMdisk handlers, utilities and programs that use extra memory for upgraded computers.

SOFTWARE LIBRARY

Innovative Concepts also has a public domain software library of 135 double-sided disks, including educational programs, program utilities, productivity software, languages, business, games, AMS collections, MovieMaker and Print Shop icons. These disks sell for $6 apiece.

Elliot says, "I sort through all the programs, make sure nothing's copyrighted—although sometimes there's shareware—group them together and fill up both sides of a disk. We've probably got one of the biggest Print Shop collections available: 11 double-sided icon disks."

Innovative Concepts also repairs Atari 8-bit peripherals and sells products from other manufacturers such as ICD and Supra. "It's convenient," says Elliot. "People want these items, so they ask us to carry them. Most of our business is mail order, although if you're in the neighborhood, you can always stop by and pick something up."

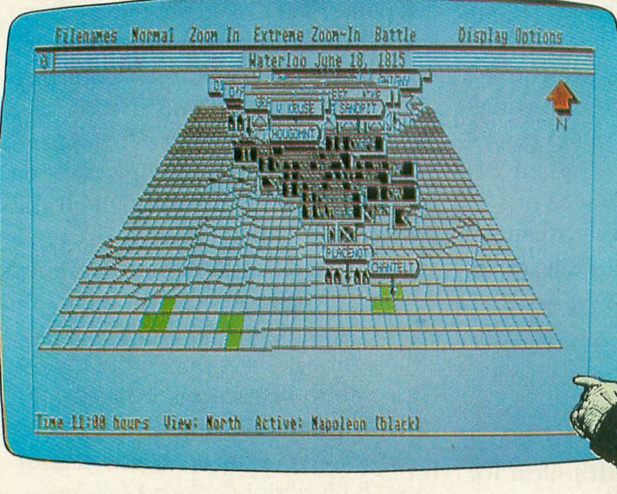
Elliot and Florka are concerned mostly with the 8-bit, but they do plan to move into the ST market. They're working on a controller that would let you run four disk drives—for instance, you could have two 5 1/4 inch, 80-track drives and two 3 1/2 inch, 80-track drives, for a total of 2.8 megabytes. And most of these drives will hook up to an ST.

Innovative Concepts is planning to be highly visible on CompuServe, primarily on the 8-bit Atari SIG but also on the Developers and Vendors Forums.

Innovative Concepts (IC)
31172 Shawn Drive
Warren, MI 48093
(313) 293-0730
CompuServe ID: 72237,2252

ST Resource

All the latest news for the ST user   October 1988





Universal Military Simulator

An ST vs. PC Review

By STEVE PANAK

Universal Military Simulator just might be the best wargame simulation available on any personal computer. One particularly striking feature is its display. The software uses vector graphics to place you on a futuristic battlefield—an abstract, barren grid, with marker flags indicating troop and landmark location. Green squares represent forest, while hills rise and valleys dip three-dimensionally from the landscape. This is in sharp contrast to similar programs with graphics that resemble an arcade game. But even more striking than the look of the game is its control interface.

View the battle from any direction,

zooming in or out. Drop-down menus remind the novice of all the options, while keyboard commands speed the expert through play. To control your armies, access a command menu for each unit and then issue orders. When all units have received their instructions, the computer (or human opponent) moves. An analysis screen keeps a running tab on the action, and you can print the battlefield and view the program's evaluation process during battle.

PC VS. ST

To me, the IBM PC version lost out to the ST on both graphic display and control interface. By using the CGA color display (but displaying in monochrome), the PC game packs only a fraction of the resolution of the ST. The PC's battlefields might have been a little sharper if the program supported a Hercules monographic card. As it is, the movement arrows are a mess when a lot of units are bunched together.

Also, the PC provides no automatic mouse support, which would simplify learning this complex game. But experienced PC mouse users shouldn't feel obliged to design their own mouse interface. The menu-driven command mode is simple to use, with all options listed at the bottom of the screen and allowable commands highlighted. It's always easier to learn to play a game, especially one as complex as Universal Military Simulator, when you can choose from a complete list of onscreen commands.

UMS just might be the best wargame simulator available on any personal computer!

Regardless of which computer you own, you can get right into the action by loading one of the five scenarios included with the game. Command Alexander the Great at Arbela, Napoleon at Waterloo, or Lee at Gettysburg. Or use the complex editor to create your own battles. Design both the field and the armies, exerting a large degree of control over your own imaginary universe. For instance, you can vary the speed, strength and efficiency of a stock infantry unit, or you can use wildcard units to create the army of the future. You're limited only by your own imagination.

Two complete, computer-specific manuals explain the use of the program, while a separate booklet provides historical background on the five stock scenarios. It's unlikely that you'll ever explore all the possibilities that UMS has to offer, but it's nice to know that you could do it. For ST or PC, the Universal Military Simulator is a blast.—STEVE PANAK

$49.95, color or monochrome. Rainbird (Mediagenic), 3885 Bohannon Drive, Menlo Park, CA 94025. (415) 322-0412.

START goes monthly this fall!

YOUR ULTIMATE ST SUPPORT

Push the limits of your ST.

Get the unbeatable combo of *START* magazine & disk—12 times a year!

Subscribe today and power up with disks filled with word processors, music and graphic software, super utilities and games.

Learn about MIDI. Desktop publishing. Business applications. Animation. News of the ST scene. Top programs by Tom Hudson, Dave Small and other ST pioneers. Reviews of the latest products. With the information-packed magazine and the programs on disk, you'll use your ST in ways you never dreamed!

START really is the ultimate support for you, the Atari ST user.



MONEY-BACK GUARANTEE
If, for any reason, you are not satisfied, we'll send your money back on all unserved issues in your subscription term.

Subscribe Today!

Call Toll Free

800-234-7001

(6am–6pm PST. Monday–Friday)

ST's Best MIDI Librarian and Editor

GenPatch and DX Heaven

Reviewed By JIM PIERSON-PERRY

GENPATCH ST

A MIDI librarian program lets you fetch and store instrument parameter data (patches) between computer storage and MIDI equipment. As your collection of equipment and patches for them grows, having an online librarian changes from a luxury to a necessity.

GenPatch ST is the most comprehensive MIDI librarian program for the ST. It can handle all standard librarian functions and quite a bit more. Most importantly, it's open-ended—you can easily teach it to work with new MIDI equipment. I use GenPatch ST as an integral part of my MIDI software arsenal and find it invaluable, particularly for multi-instrument patch setups.

There are three main types of operations in GenPatch ST—system, librarian and MIDI analysis. The system operations include disk formatting, file deletion, customizing screen colors, reporting on memory status and enabling MIDI Thru (useful for systems using a master keyboard to control slave synthesizers).

GenPatch ST is the most comprehensive ST MIDI librarian program.

Over 50 configuration files are included and it's easy to create new ones. Even non-standard MIDI implementations (such as Casio and Roland) are handled easily.

Each MIDI data transfer is called a block. After receiving a block, you can save it or continue to add more data (from other instruments) to build a multi-block file. Thus you can create a single file containing all equipment setup information for a given song—great for live use! Data files can also be loaded automatically by the Hybrid Arts sequencer programs Synch Track and SMPTE Track ST.

The MIDI analysis operations let you view the data flow between computer and equipment and interpret MIDI data held in memory. The latter is extremely valuable in hacking MIDI programs and patch storage formats. Up to 36 macros can be defined.

$149. Hybrid Arts, Inc., 11920 West Olympic Blvd., Los Angeles, CA 90064. (213) 826-3777.

DX HEAVEN

DX Heaven is a MIDI patch editor and librarian program for the widely used original Yamaha DX7 synthesizer and compatibles. It does not support the more recent DX7 II or TX802 models. Like other Dr. T software, DX Heaven is heavily copy-protected and uses a non-standard GEM interface which ignores desk accessories.

Program operations can be split into three areas—system, librarian and patch editor. Options are displayed in a menu and selected with either the mouse or function keys. Screen displays are clear and easy to work with.

System functions include describing how the synthesizer talks to the ST, selecting screen colors, printing disk directories and formatting disks. MIDI setup options allow for input merge and rechannelization (needed for a master keyboard with slave synthesizers), channel selection and synth type (DX or TX). All system parameters can be saved for future use.

The librarian mode can hold eight banks (32 patches per bank) co-resident in memory. Voices can be freely copied, moved and swapped between banks, and function data can be copied between patches.

The patch editor is the heart of the program. Obviously a great deal of thought has gone into the user-interface. Three separate screens are used: numeric parameters, function controllers and graphic editing of envelopes. Numeric parameters can be changed by clicking on the parameter and moving the mouse, using the [+] and [-] keys, using the graphic slider or simply typing the new value. The graphic envelope editor is easy to use—just click on a data point and drag it to the desired new position.

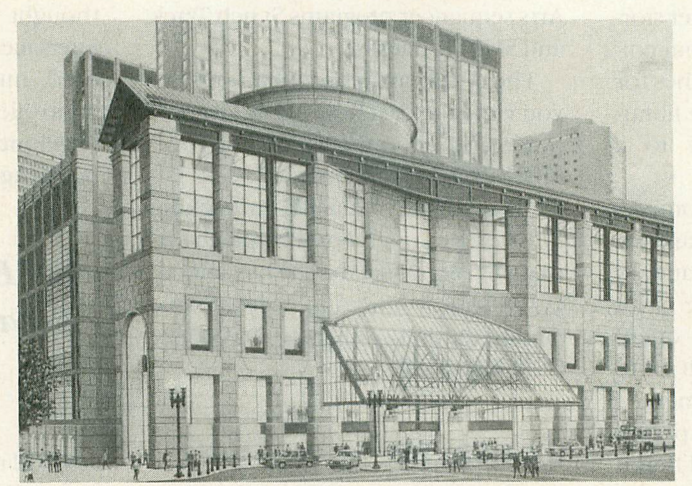
DX Heaven lets you create new patches randomly.

What really sets this program apart from others is its use of the mouse to play notes and give instant feedback on how the patch sounds. Moving the mouse horizontally changes the pitch; moving it vertically changes the loudness (velocity). Holding down the left button and moving the mouse vertically adds in modulation. In the system setup you can assign the mouse to reflect any standard modulation controller. Playing the synthesizer this way quickly becomes intuitive (and fun!), especially if you don't have a keyboard.

In keeping with the current trend, DX Heaven also lets the computer create new patches randomly. You can select which patch parameters to change and by how much. The program comes with 25 banks of patches.

$129. Dr. T's Music Software, 220 Boylston Street, Suite 306, Chestnut Hill, MA 02167. (617) 244-6954.

Look What The 11th Northeast Computer Faire Is Coming To...



THE NEW JOHN B. HYNES VETERANS MEMORIAL

CONVENTION CENTER

It's time once again for the longest running, most important computer show for sophisticated small systems users... The Northeast Computer Faire! Back for its eleventh year in Boston. And back to its original home – the Hynes. The most conveniently situated exhibition center, newly renovated to offer the utmost in meeting accommodations.

Year after year, knowledgable enthusiasts return to this event because they know they'll find the products and services they need through programs only the Northeast Computer Faire provides, such as:

VERTICAL MARKET MATCHING: Uniting specialized sellers and buyers. You'll find companies offering systems and software for vertical markets such as finance, medicine, manufacturing, law, education, engineering, construction and other popular vertical markets throughout the Boston area.

PRODUCT MATCHING: Making it easy for attendees to find exhibitors displaying upgrades, add-ons and enhancements for product groups such as IBM PC, P/S-2, Commodore, Atari, Apple II, Macintosh, UNIX and Lotus.

EXHIBITOR PRESENTATIONS: Allowing exhibitors to introduce and demonstrate new products to potential customers as well as the press.

Last year's Faire saw a 30% increase in attendance over the previous year. This year, with the outstanding facilities of the Hynes, the high powered Conference sessions led by the experts and our carefully targeted marketing promotion, and P.R. campaign, you can can expect the Northeast Computer Faire to be bigger and even better. Be a part of it and see for yourself! Fill out and send in the coupon, or call (617) 449-6600 extension 5028, today!

Tell Me More About the 11th Northeast Computer Faire!

- ☐ Send me complete information about exhibiting, including brochure, contract and floor plan.
- ☐ Send me complete information about attending.
- ☐ Have a sales representative call me right away.

Name__________

Title__________

Company__________

Address__________

City__________ State__________ Zip__________

Telephone (____) __________

Type of Business__________

Mail to: The Northeast Computer Faire, 300 First Avenue, Needham, MA 02194

THE 11TH NORTHEAST COMPUTER FAIRE

OCTOBER 27–29, 1988

HYNES CONVENTION CENTER • BOSTON, MA

ST Bridge Partners

—opponents and instructors too

Reviewed By HARVEY BERNSTEIN

Bored? Dying for a game of bridge, but can't find three other players? Or do you just want to improve your game. Three ST programs not only provide a computer "partner" and two opponents, but also offer a helping hand.

Two of the programs come from Artworx. **Bridge 5.0** plays a decent (if uninspiring) game, while **Compubridge** is a text-based instructional program (written in ST BASIC, of all things). From Britain's CP Software, **Bridge Player 2000 with Tutor** combines elements of both and is by far the best. All three packages work on either color or monochrome monitors.

Compubridge ($29.95), based on a popular book series by Shirley Silverman, teaches the basics of bridge using a combination of straight text and quizzes. Ten lessons cover the range from beginning concepts through finessing and overcalls.

While the ideas of a fully self-contained bridge tutorial on a disk (even one written in BASIC) might be a good one in theory, Compubridge leaves a lot to be desired. First, the entire right half of the ST screen is taken up by a chart of numbers and suits to be clicked on when answering questions in each lesson's quiz. Not only is this unnecessary in the tutorial portion of the program, but each chapter offers only four or five half-screens of text. If the program offered a full-screen display, this would break down to two to three screens in each of 10 chapters—not much depth.

In the tutorial, sometimes a sample hand is displayed. Unfortunately, it is wiped from the screen before it's discussed. This means that unless you have a photographic memory or want to flip the "page" back and forth (a very slow and tedious process), you must copy it down by hand.

Each quiz presents a series of sample hands and requests the proper bid response or card to play. By clicking on the aforementioned chart, players select their answer. Now, bridge is a complex game, and in many situations, there is more than one correct answer. Compubridge acknowledges this in its documentation, and handles it by "suggesting" an alternative. Choose a possible correct answer, and the program responds with "Another possible answer is. . ." Very diplomatic—except that you get this response *whenever* you enter an answer different from the program's best suggestion. But while there may be many correct answers in a given situation, there are more *incorrect* answers—which Compubridge never corrects.

Bridge 5.0 ($39.95) is far more successful than Compubridge. The computer controls the other three hands in a typical bridge "rubber." In addition to playing random hands, Bridge 5.0 lets you customize hands and save them to disk. Stuck for the proper bid or card to play? Bridge 5.0 has an "auto" mode that suggests the correct move if requested.

Bridge 5.0 plays a good game, understanding both the Blackwood and Stayman bidding conventions. Graphics are good, and all input is handled with a point-and-click method.

Bridge Player 2000 with Tutor takes the concepts of both programs and ties them together nicely. The tutor is hardly for beginners. It assumes familiarity with at least the rules of bridge and, in the intermediate to advanced lessons, Stayman and Blackwood. It serves more as a means of brushing up on knowledge than teaching anything new. There are 20 fixed hands, each of which seems designed to focus on a concept—basic bidding, short bids, finesse, etc.

Based on the concept of learning by doing, you bid first and then play the hand. But the program will not accept a bid *or* a play unless it's the correct one! If you're completely stumped, press [Z] to display the proper move. This is fine during bidding, where the most proper response is usually pretty cut and dried. But during play, often there's no single "correct" play, and second-guessing the program can be frustrating.

After playing the sample hand, an analysis is offered. While designed to further explain the "lesson" of the hand, it's written in a style similar to the bridge column in the daily paper.

The Play Bridge option gives you a choice of bidding and playing hands, or just bidding. While you can't set up custom hands as in Bridge 5.0, you can choose between set and random hands, and always or never being dealt an opening hand. Each hand can be replayed upon completion.

The graphics in Bridge Player 2000 with Tutor are not as good as in the Artworx program, nor does it support mouse input, but these are minor complaints. Bridge Player 2000 plays a superior game of bridge.

Dying for a bridge game but can't find three more players?

Artworx, 1844 Penfield Road, Penfield, NY 14526. (800) 828-6573. Color or monochrome.

CP Software, Stonefield, The Hill, Burford, Oxfordshire, OX8 4HX, United Kingdom. 099 3823463. Color or monchrome.

Juggler, Turbo ST,

JUGGLER II

One thing the ST has really needed is a switching program that lets you move between two or more programs without constantly saving your work, loading the next program, looking up the information, reloading the old program, reloading the old file, etc. However, here's the problem with this kind of utility—some programs use GEM, some don't. Also, some GEM programs are structured poorly.

The first version of Juggler was compatible with very few GEM-based programs. **The Juggler II**, however, partitions RAM. Both programs are on the disk you get with The Juggler.

Juggler II is far superior to Juggler. When you boot your system with an auto folder, the first thing that happens is that your system boot is aborted. If you have a megabyte or more internal memory, the program will ask if you want to partition RAM into two, four or eight equal sections. (On a 520ST, the program automatically chooses two sections.) The system reconfigures, and when booted up, you enter the first partition. To boot the second, and subsequent partitions, you simply press [ALTERNATE] [LEFT-SHIFT] once for each section.

Into the first partition you load the first program you want to work with. When you need to run another program, press [ALTERNATE] [LEFT-SHIFT]. After the screen dims and then brightens, load the second program and run it as usual. To start juggling between the two programs, cycle through the partitions by using the [ALTERNATE] [LEFT-SHIFT] command.

Since one of the major problems hindering compatibility with Juggler II is poorly constructed GEM programs, the manual contains a special section dedicated to GEM programmers. It reviews some of the rules about memory and windows in GEM to help you develop standardized applications.

The manual lists almost 50 programs that Juggler II works with, along with the problems you might encounter. It also lists a number of programs you can't use with Juggler II, such as GFA BASIC and NEOchrome.

Frankly, if you own a 520ST there's no point in using Juggler II—each partition will have less than 256K of memory available and you'll have virtually no room in which to work.

However, if you have a megabyte or more of memory, then you could find Juggler indispensable. It won't fulfill all your needs, but it will give you the freedom to move within several projects without the headache of constantly swapping the same disks and loading and reloading the same files.—TONY LOVELL

With a megabyte of memory, Juggler II may be indispensable, but with 512K there's no point in using it—you'll have almost no room to work with.

Kathrina

$49.95, color or monochrome. MichTron, 576 South Telegraph, Pontiac, MI 48053. (313) 332-5452.

TURBO ST

One of the most requested ST enhancements is for increased speed of the GEM operating environment. Atari's long-promised blitter chip is touted as a solution, but for the immediate future it will probably only be available on the new Mega models.

Instead of waiting for new hard-

Analyze, Flight Scenery

ware, why not speed up the existing software? That's the approach taken by **Turbo ST**, a program which acts as a "software blitter." Taking over the text display routines from GEM, Turbo ST can speed up virtually all ST application software using screen text. Word processors, spreadsheets, databases and many other programs can run two to three times faster than normal—in some cases even faster than with the hardware blitter chip itself.

Turbo ST comes as an unprotected, standard desk accessory to be copied into the root directory of your boot disk. To use it, simply click on "Turbo ST" from the DESK command menu. A dialog box appears with an install button. Click on it, and you're in high gear. A subsequent call to the desk accessory lets you turn it off and resume normal operating mode. The program is compatible with all screen resolutions and ST models, including the Megas.

The program works by intercepting calls to GEM routines for text display and screen clear or scroll and substituting its own routines. The new routines were written in 68000 assembly language, optimized for speed, which are more efficient than the native GEM code. Both standard GEM programs (.PRG) as well as TOS programs (such as ST Writer) are supported.

Only the text screen display routines are supplanted, so other aspects of application programs—such as graphics or handling peripherals—will operate at normal speed. The overall speed increase for any program depends on how much it deals with screen text displays. Turbo ST cannot speed up application programs which bypass GEM for their own custom display routines, such as WordPerfect.

How much faster do programs work under Turbo ST? For starters, the scrolling speed of ST Writer is doubled. Other examples tested by the developers showed a 50% paging speed increase with dBMan, 40% for GFA BASIC and 80% for Final Word. Speed improvement is also a function of the monitor resolution. Color displays are typically faster than monochrome.

A text file on the program disk lists the few programs that have incompatibility problems with Turbo ST. Most of these are due to illegal oper-



Turbo ST doubles ST Writer's scrolling speed and ups dBMan's paging speed by 50%.



ating systems calls used by some public domain programs.

I highly recommend Turbo ST and consider it a contender for the ST product of the year. It works well, requires no user supervision and is very affordable. In addition, SofTrek is currently working on upgrades which would provide auto installation and the ability to speed up displays using custom screen fonts. Do yourself a favor—buy Turbo ST and say goodbye to the no-blitter blues.—JIM PIERSON-PERRY

$49.95, color or monochrome. SofTrek, P.O. Box 5257, Winter Park, FL 32793. (407) 657-4611.

ANALYZE

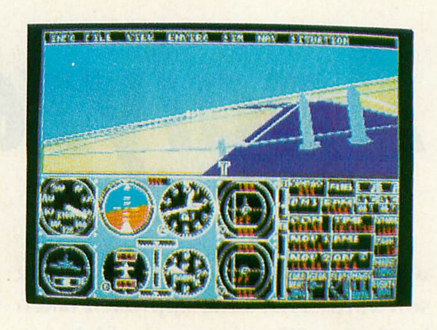
Analyze makes many other ST programs look amateurish in execution and marketing. It isn't copy-protected and costs a paltry $139.95—or less. (Horizon Computers in Denver is running a $100 discount as I write.) Yet it does *more* than the famous Lotus 1-2-3. (For instance, an unmodified Lotus won't make 3-D graphs or comparison charts.) I find Analyze quicker and simpler than VIP Professional, the Lotus clone for ST. Analyze is cheaper than either one. And it's also disgustingly easy to use!

Analyze reads and writes Lotus 1-2-3 files just like VIP does. If you take your work home, this means you'll need to keep your IBM files on 3 1/2 inch disks, or connect a 5 1/4 inch disk drive to your ST.

My wife knows *all* the ins and outs of Lotus. So when she sat down with Analyze and whipped off several pages of spreadsheet, then flipped to charts and graphs in only a couple of moments, I attributed it to her Lotus training. However, when I test drove Analyze, I ignored the documentation on first run (a good way to see how friendly a program is) and was delighted to discover that GEM's pointers and windows are used extensively. I took longer than she did, but I also had a spreadsheet and graph up and running in minutes—and even printed it.

Then I opened the documentation and found that the 235-page book was written in understandable English. The two tutorials consist of a beginner's section (for me) and an advanced one (for everyone else). The manual does everything short of springing off its own pages to embrace and comfort you. But the index, though complete, is one page off at times. (According to the index, "Worksheet Archive" commands are





on page 154. They're actually on page 153.)

The speed of this program is blinding. I've become sick of spreadsheets and I usually delegate them to my staff. But if only the Air Force would stock up on STs, I'd never pass by a chance to practice with Analyze. In fact, the *only* problem I've found is that the printer I use (Gemini 10-X) doesn't get along with Analyze's graph printing. There are simple instructions for creating your own printer driver, but it would have been nice to have additional complete printer drivers available.

CompuServe sysop Steve Pagliarulo's Florida company, MicroSystems, provides great support, including a BBS with two lines.—CHESTER COX

$139.95, color or monochrome. MicroSystems, 12798 W. Forest Hills Blvd., Suite 202, West Palm Beach, FL 33414. (305) 790-0772.

WESTERN EUROPEAN TOUR

The new **Western European Tour** ST scenery disk for Sublogic's Flight Simulator II is a winner. Since the package arrived at **Antic**, staff members have logged more flight hours over Europe than Charles Lindbergh, Eddie Rickenbacker and Snoopy.

Aided by a few staff members who have visited Europe, we "flew" our 1040ST over the Thames and between the towers of London's Tower Bridge. Turning south, we circled Stonehenge, crossed the English Channel, buzzed the Eiffel Tower and flew through the Arc de Triomphe *upside down*.

The scenery disk covers northern France, southern West Germany and the southern United Kindom. The package includes a "close-up" map of each of these areas (approx. 30 miles to the inch) and an overall map (approx. 300 miles per inch) covering from Spain to the USSR. These maps show coastlines, rivers, airports and the position of radio navigation stations. No airports or radio navigation stations are shown for any locations east of the Iron Curtain—just coastlines.

To be eligible for the "Find Red Square" contest, you must land in Moscow's Red Square, a la West Germany's Mathias Rust.

Unfortunately, these are the only tools you have to find Moscow and land in Red Square, the object of SubLogic's newest contest, "Find Red Square." To be eligible, you must land in Red Square (a la Mathias Rust, the West German daredevil) and submit its exact coordinates to SubLogic. A randomly-selected winner will receive a trip to Europe and a $1,000 cash prize. Two months into the contest, SubLogic had received more than 1,000 correct entries. Closing date is November 15, 1988.

"We originally considered having the contestants fly through the Arc de Triomphe—with the winner getting an official citation from the Paris Police Department," said Deborah Isreal, SubLogic's Director of Promotion, "but after Mathias Rust landed in Red Square, we thought it would be more fun for the contestants to land there, too."

After nearly two days in Soviet airspace, a band of intrepid Antic editors glanced up from their "World Almanac" map of Europe, and saw an unusual looking piece of landscape. A closer inspection revealed a river, a strangely shaped gray wall, and a large, red square.

Aha!

After everyone groaned a bit, we noted our position coordinates and flew to Paris for a much-needed rest along the Seine.—CHARLES JACKSON

(ST Flight Simulator pilots: See the review of Microsoft's useful $9.95 book ***Flight Simulator Co-Pilot*** *in this issue's 8-bit Product Reviews*—ANTIC ED)

$24.95, color. SubLogic Corporation, P.O. Box 4019, Champaign, IL 61820. (800) 637-4983. (Requires Flight Simulator II software)

Bomber Command, Questron II

BOMBER COMMAND

Bomber Command is basically an ST conversion of the arcade hit Xevious. You are piloting a maneuverable Mosquito bomber here. You dogfight oncoming fighters and drop bombs on ground-based enemy units. The graphics are very well done, with lots of different land-based and airborne adversaries to blast apart.

The joystick control is usually fast and responsive, although it tends to bog down when the screen is filled with several moving objects. This slowed down and simplified the gameplay—not that Bomber Command was *easy*. In fact, it's very challenging, but only for a time.

The program is too easy to master and become bored with. A save game

Bomber Command's not easy—it's very challenging, but only for a time.

feature lets you accumulate astronomical scores, saving your position each time you achieve another bonus game. Unfortunately, the passing landscape began rerunning like the background of a cheap cartoon after about two hours of play and 10,000 points, and play was downhill from there.

This was a shame, because the game was fun while it lasted. I would love to give Bomber Command my highest rating, and with a little more variety—perhaps larger and more complex enemy installations to level—I could have done so.—STEVE PANAK

The passing landcape began rerunning like the background of a cheap cartoon.

$42.95. color. Mars Software Development, Inc., P.O. Box 70947, Pasadena, CA 91107. (800) 541-0900 (orders); (818) 351-6224.

QUESTRON II

A heroic Quest! Demons to defeat and monsters to slay! And in the end, an Evil Wizard to send back to wherever Evil Wizards come from! This is the stuff of which SSI's **Questron II** is made. Unfortunately, it's the same old stuff we've seen in nearly a dozen ST releases, including SSI's own **Phantasie** series.

Although Questron II adds nothing new to the genre, in all fairness its storyline is the first *prequel* to an adventure game. In the original Questron, the Book of Evil Magic was recovered from the hands of Mantor. Now it turns out that it cannot be destroyed. So your wise mentor, Mesron, sends you back in time to prevent the book from being created.

As in most role-playing games (Phantasie or Ultima series, etc.) you start off as a lowly peasant with not much to defend yourself besides your wits. By traversing the countryside and defeating a managerie of legendary creatures, you gain wealth and experience, allowing you to acquire spells and improved weaponry. Questron II spans two continents, as well as the requisite tombs, castles, and dungeons.

The graphics are good, since the ST translation was handled by Westwood, the same people who converted Phantasie III. The one new feature is a list of commands on the left side of the screen. Pointing and click-

You'll be sent back in time to prevent the creation of the Book of Evil Magic.

ing can be used to avoid keyboard input.

In short, if you are a role-playing diehard who simply *must* have every new fantasy relase, go for it! For the rest of us, Questron II is simply the same song, next verse.—HARVEY BERNSTEIN

$49.95, color. Strategic Simulations Inc., 1046 N. Rengstorff Avenue, Mountain View, CA 94043. (415) 964-1353.

ST NEW PRODUCTS

By GREGG PEARLMAN, *Antic Assistant Editor*

GOLD RERUNNER

As the commander of a single-wing fighter in **GoldRunner II** ($39.95), a fast-paced arcade game, you must rescue the stolen defense robots before they are turned upon your now defenseless planet. Two $14.95 **Scenery Disks** give you new territory to explore. Just pop a Scenery Disk into the drive instead of the GoldRunner II main data disk, and you're boldly going, as Captain Jean-Luc says, where no one has gone before.

If you prefer a game that's more down-to-earth, try **International Soccer** ($39.95). You can control game length, day or night play, team colors and formations, wind and weather in this joystick-driven soccer simulation.

Color monitors required. Microdeal (MichTron), 576 S. Telegraph, Pontiac, MI 48053. (313) 334-8729.

IN LIKE FLYNN

Captain Blood uses both fractal and vector techniques to produce stunning graphics. In this game (which has nothing to do with the famous film), Torka, Captain Blood's space squeeze, has promised to fill the house with the patter of 2,000 little feet. Blood would be equal to the task—except for a handful of Captain Blood clones scattered around the galaxy, sapping his energy. Your mission is to find and summarily dust the clones.

$49.95, color. Mindscape, 3444 Dundee Road, Northbrook, IL 60062. (312) 480-7667.

STARGLIDER SEQUEL

Starglider II features spectacular graphics, digitized sound effects and smooth animation as you fly around alien deserts, destroying Ergon patrol ships and rescuing colonies from the Ergons. (Each planet has its own characteristics and cultures.) Your state-of-the-art vessel is equipped with a 3-D instrument panel and sophisticated weapons.

$44.95, color. Rainbird, 3885 Bohannon Drive, Menlo Park, CA 94025. (415) 322-0412.

TYPHOON THOMPSON

From the author of Choplifter! comes **Typhoon Thompson: Search for the Sea Child**, a 3-D arcade game that might also be called "Popeye and Swee'pea in Space." A cruiser has crashed on a remote planet and the only survivor is a baby boy. You've got to rescue him, fighting your way past sea sprites, ancient technology and spirits from a long-dead civilization.

$34.95, color. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903. (415) 492-3200.

MICHTRON MONTAGE

GFA BASIC, Version 3.0 ($39.95) gives you more than 300 new commands and increases speed 40% to 60% over the previous version of GFA BASIC. Old GFA BASIC programs are compatible with the new version, and you can still use your old books.

In Version 3, once you debug a procedure, you can "hide it" — only the procedure name is shown in the listing, making your visible code more readable. Other useful features include a clock in the menu field, the ability to place editor-marks in your program, and a line counter. Also, all AES functions have been implemented, as have joystick commands and case distinction (SELECT-CASE and ELSE-IF).

The **GFA BASIC Programmer's Reference Guide, Volume I** ($29.95) contains information on the commands for GFA BASIC, Version 2.0, and future volumes will be dedicated to Version 3. A special index lists each command by type, with cross-references to the appropriate page.

For beginners, **GFA BASIC Training ReBoot Camp** ($19.95) should do the trick. Features include a mouse-drawing program, Simon game, onscreen jokebook, tune player, simple animated game, dice game, graphics display program, programming aids and clear instructions.

On the **GFA BASIC Reference Card** ($4.95), each command has been grouped according to function, and each entry contains a brief description of the command and demonstrates the proper syntax for use. Now you won't have to interrupt your programming to flip through a manual.

MichTron has packaged five of its most powerful utilities into **Utilities Plus** ($59.95):

MichTron Utilities is a disk editor that lets you read and change individual bytes anywhere on a floppy or hard disk. You can search through files and change contents, alter file and volume names, adjust file attributes, format individual disk tracks, repair damaged disks, and more. The screen displays both the hexadecimal and ASCII output.

The commands in the DOS Shell utility are virtually the same as MS-DOS and let you list files, check the free space left, copy files, etc., much faster than GEM allows. Global wildcards are also supported.

When recording disk contents with Super Directory, you can enter not only the filename, but also a category letter and remark of up to 20 characters. It also keeps track of disk number, filesize and pathname.

M-Disk, a RAMdisk program, and Soft-Spool, a print buffer program, are combined into M-Disk Plus, while STuff is a group of 21 utilities and desk accessories including AUTODATE, which sets the system date and time without a clock card, AUTOFOLD, which changes the execution order of the AUTO folder programs, and GREP, which searches text files for selected character strings.

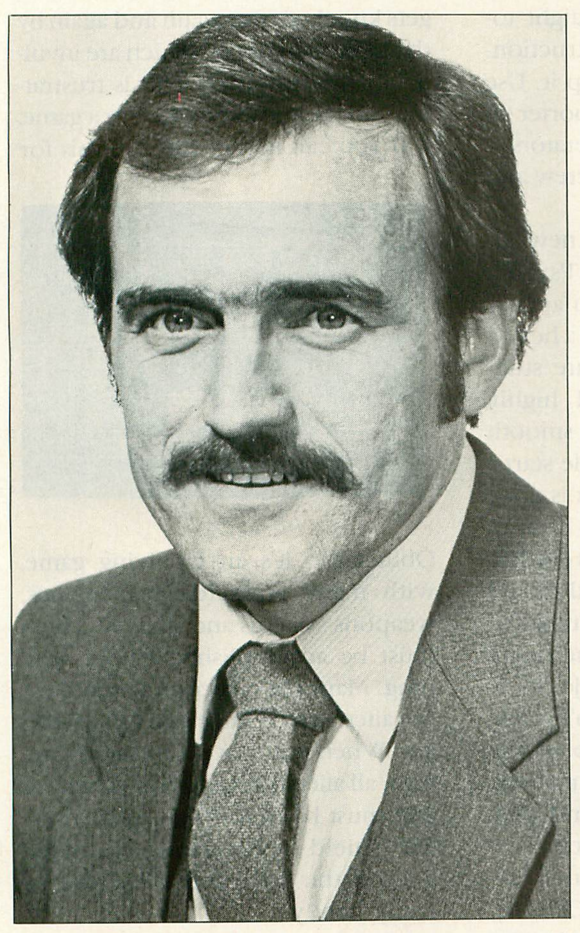
With the GEM-linked **GFA Draft Plus** ($159.95), a 2-D CAD program, you can quickly learn to design electronic circuits, create architectural plans and scaled technical drawings. Drawings can have up to 255 layers, 10 of which can be shown at a time. More advanced users have the specially developed MACRO command language at their disposal. Commands can be entered from the keyboard, or a series of commands can be stored on disk.

MichTron, 576 S. Telegraph, Pontiac, MI 48053. (313) 334-8729.

New ST product notices are compiled from information provided by the products' manufacturers. ***Antic*** *assumes no responsibility for the accuracy of these notices or the performance of the product.*

ST Desktop Publishing Consultant

By Gregg Pearlman, *Antic Asssistant Editor*



Inexpensive Atari ST desktop publishing systems are becoming increasingly accepted by business and professional users, says Cimarron Computer president Rod Coleman, a retailer and consultant in Reno, Nevada.

Cimarron sets up ST desktop publishing systems for people who do resumes, newsletters and catalogs. The company sold 15 to 20 Atari desktop publishing start-up systems in the past 18 months. There have been many more "business" setups for spreadsheets and databases—80 to 100 in the last year.

Recently Cimarron set up a desktop publishing system for a Reno television personality who sidelines as a resume writer for people in the media industry. The system consists of a 1040ST, a monochrome monitor, an HP Laserjet and a hard disk.

Cimarron has also sold systems to schools, mostly private. Desert Research, part of the University of Nevada at Reno, runs Absoft's AC Fortran to analyze clouds. They also have an HP Laserjet for desktop publishing. And some 15 to 20 branches of the Nevada Department of Motor Vehicles are using a Cimarron system consisting of a 1040ST, Data Manager and dBMan to keep track of driver's licenses and auto registrations.

Coleman's company has done some business setups with the Magic Sac Macintosh emulator, but much more with the PC-Ditto IBM emulator. "People want the ST for its ease of use," he says, "but they also want the 'PC option.'"

Coleman used to package ST desktop publishing systems with the Hewlett Packard Laserjet series of printers. "I was amazed at the reliability of the HPs," he says. He helped test the HP printer driver for Publishing Partner software.

> ***15 to 20 branches of the Nevada DMV use Cimarron Mega systems and dBMan.***

But when the Atari Laser Printer reached the market, he switched—even though he says, "You really need a Mega for the Atari Laser Printer. The Atari has no front panel control, so everything must be done by the software."

Coleman found that the Atari yields darker printouts than the HP, but the grays are streaky. "The big differences between the Atari and Hewlett Packard lasers are relative cost and speed," he says. The Atari is two to three times faster. Many operations taking 18 minutes with the HP take six minutes with the Atari."

Pros accept inexpensive Atari solution

Dave's Game Room

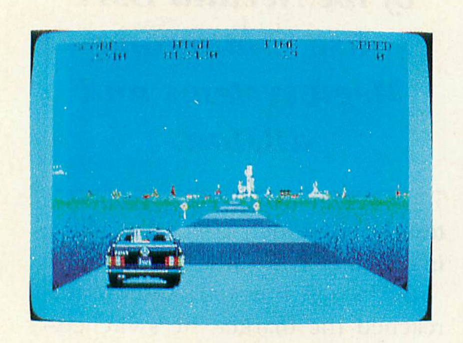
Obliterator, Leatherneck, Eagle's Nest, Vampire's Empire, Crazy Cars

Reviewed By David Plotkin

CRAZY CARS

Crazy Cars is an auto racing game, similar in many ways to Pole Position. Your view is from above and behind your joystick-controlled car. The object is to complete each of three courses in the allotted time. If successful, you're given a faster car and less time to complete the course. The other cars on the course will try to run you off the road and you must pass them to improve your time. There are also bumps in the road that can throw your car right up in the air, making it difficult to steer!

The graphics are colorful and detailed. The scrolling of the road, the



background foliage and the roadside signs all add to the realism, and the cars are well-rendered. Where this game starts to lose its charm is at the joystick control system. At around 200 mph, the cars should be very responsive, but they aren't. You must hold the joystick in a given direction for quite a while before you get a response. This is frustrating and leads to collisions, either with another car or running off the road. Once the cars *do* respond, they jump from one position to another in rather large increments so that small adjustments in road position really aren't possible.

$39.95, color. Titus Software, 20432 Corisco Street, Chatsworth, CA 91311. (818) 709-3962.

OBLITERATOR

Oh, no! An alien spacecraft has invaded Federation space and defeated the star fleet. Now this apparently invincible craft is headed straight toward Earth, bent on destruction. There's only one way to stop it. Use the prototype matter transporter to beam you—last of the Obliterators—aboard to defeat the enemy crew and destroy the alien craft.

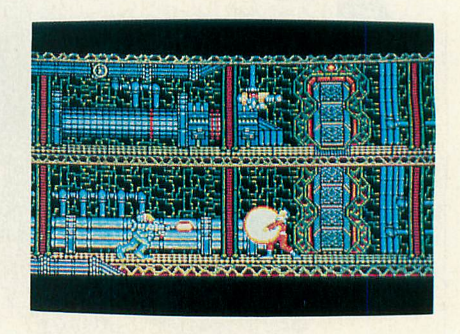
So starts **Obliterator**, a new arcade/role playing game from Psygnosis. As the game begins, you appear on the alien craft armed with a heavy-caliber gun. The graphics are stunning, richly rendered and highly detailed. The animation is smooth and convincing. Then trouble starts.

Controlling the Obliterator is done via the standard Psygnosis control panel. This control system is confusing, hard to use, awkward and should be replaced. The game documentation says you can control the figure with the mouse, keyboard or joystick. But the joystick trigger doesn't work. The mouse takes advantage of the control panel at the bottom of the screen to fire, run, jump, defend, pick up objects and board elevators.

A secondary control panel, accessed by pressing the [SPACEBAR], lets you change weapons, monitor your status and watch your score. You can move the Obliterator either by using the [ARROW] keys, clicking on the arrows in the control panel, or moving the mouse cursor on the side that you want to move towards, then clicking the mouse button.

The only really effective method of control is to use the panel at the bottom of the screen. But you can't keep your eyes on the action *and* on the control panel. If you try to use the other methods of control, the Obliterator tends to run headlong into things, including enemy objects, which costs shield energy and, eventually, the game. It's difficult to get him to walk into an elevator, and apparently there's no way to make him duck, so he just gets knocked over again and again by the hovering robots, which are invulnerable to his pistol. This is frustrating and there's no way to save a game.

If you can master the controls for



Obliterator, it's an involving game, with many goals (disable engines, weapons systems and shields) which must be accomplished before winning. Mapping is recommended, for the alien craft is huge and full of danger. When you leave a room and return, all alien threats have regenerated and must be destroyed again. There are shield regenerators scattered around the ship, and these can be really handy.

$39.95, color. Psygnosis, 1st Floor, Port of Liverpool Building, Pierhead, Liverpool L31BY, England. 011 4451 236 8818.

VAMPIRE'S EMPIRE

Vampire's Empire presents a game theme which has not been done to death and features some outstanding (and adult) graphics. But it has too many problems for me to recommend it.

You take on the role of Van Helsing, the famous vampire killer. Your mission is to enter Dracula's lair and

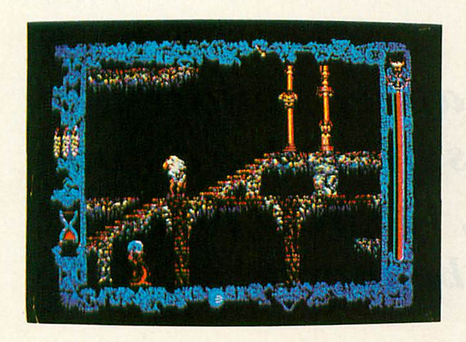
dispose of this most notorious of vampires by positioning mirrors throughout the lair to reflect sunlight into its murky depths and disintegrate the vampire. Tossing garlic helps protect yourself.

Confusion starts almost immediately. You find yourself at the entrance to the lair. Your view is from the side as you guide Van Helsing with the joystick. To select a weapon—various mirrors, a magic light-directing ball, or garlic—push the joystick down while pressing the button.

You must use the joystick diagonally to negotiate stairs–never an easy thing to do, especially since the instructions don't cover this. Placing mirrors is a hit-or-miss affair. Sometimes it works, sometimes it doesn't. Since you can't *see* the sunlight, It's tough to figure out whether placing mirrors is doing any good, let alone where to aim them! A small arrow at the top of the screen is never explained. But it might have something to do with the direction of sunlight.

Using the magic ball is just as frustrating. You levitate it to your chosen altitude, then change the sunlight direction. Again, I could never tell if it worked. At least the garlic worked.

About these demons. Many of them



are naked (or nearly naked) women, rendered with remarkable clarity and detail. This is a decidedly adult game! Overall, the graphics are *very* good, but the screens are *not* "smooth scrolling" as the documentation states. Instead, they switch between one screen and another very quickly, which is disorienting.

There are some other unexplained items on the screen, including what appears to be an hourglass and is possibly a lifeline which gets shorter whenever you get the short end of a demon encounter. When this "lifeline" runs out, you end up back at the beginning of the game. But sometimes you end up there anyway for no apparent reason.

A lot of this confusion may arise from the "documentation," a double-sided 8 1/2×11-inch sheet of paper with about half of one side actually used for game instructions. The brevity of the "manual" may have been a misguided attempt to have players figure everything out for themselves. Vampire Empire needs much better documentation, lots more programming work, or both.

$29.95, color. Digitek, 10415 N. Florida Avenue, Suite 410, Tampa, FL 33612. (813) 933-8023.

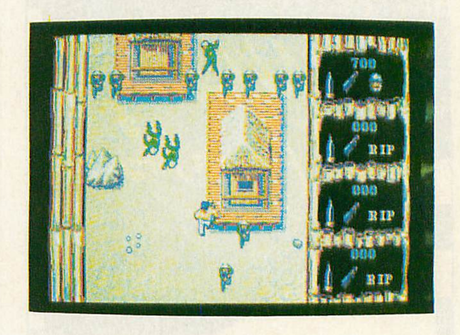
LEATHERNECK

Leatherneck casts you in the role of a U.S. marine landing on a beachhead and fighting your way inland. Four can play, using Michtron's optional adapters to connect four joysticks to the ST's two joystick ports. Your marines are viewed from above and move across a vertically scrolling landscape. Various objects afford cover from enemy gunfire, which is intense. Huge numbers of enemy soldiers come at you from the front, and you must deal with gun emplacements firing from concrete blockhouses.

Your marine has three weapons available. Chief among these is the heavy machine gun, which has a range greater than the guns carried by the enemy soldiers. You can blast them before they can get close enough with their guns or grenades. The second weapon is a light machine gun which is virtually worthless, since you must get very close to an enemy soldier before it will work.

Lastly, you carry grenades which can only be thrown forward. This is awkward because they are the only weapon effective against gun emplacements which can fire at you from behind.

The Leatherneck graphics are colorful and realistic, and the digitized sound effects are chilling. Unfortunately, games tend to be very short, because enemy forces quickly become overwhelming and you get only three lives. The odds are better when playing with friends, although you



must be careful not to shoot each other.

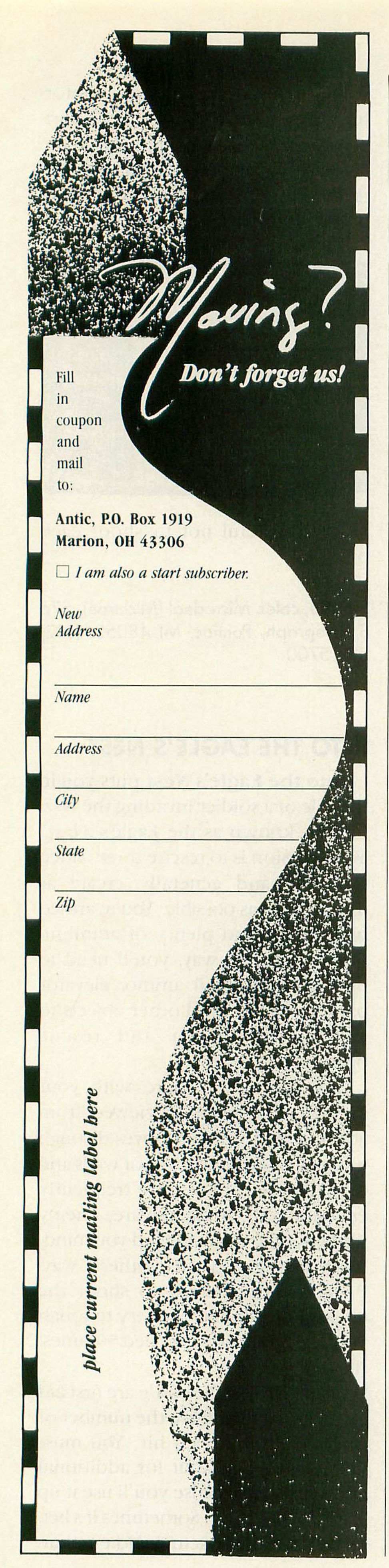
$39.95, color. Microdeal (Michtron), 576 S. Telegraph, Pontiac, MI 48053. (312) 334-5700.

INTO THE EAGLE'S NEST

Into the Eagle's Nest puts you in the role of a soldier invading the Nazi fortress known as the Eagle's Nest. Your mission is to rescue three Allied saboteurs and generally create as much havoc as possible. You're armed with a rifle and plenty of ammunition. Along the way, you'll need to pick up additional ammo, elevator passes, cell keys and other objects to aid in the search and rescue operation.

You control the hero with your joystick. The game is viewed from above as your soldier moves through a colorful, scrolling maze of walls and other obstacles. The most frequently encountered obstacles are enemy soldiers, who move toward you mindlessly and get in each other's way. Press the fire button to shoot the enemy. Meanwhile, they try to touch you and, if you are touched 50 times, the game is over.

Strewn about the castle are first aid kits which will reduce the number of times you have been hit. You must keep a sharp lookout for additional ammunition, because you'll use it up at an alarming rate. Sometimes it's better to run from enemy soldiers than



to shoot it out. You can shoot open treasure chests if you have ammunition to spare—sometimes there are valuable artifacts inside. But be careful not to shoot a chest full of dynamite and end the game immediately. To win, you must rescue the three saboteurs. This is no easy task.

Into the Eagle's Nest is easy to play and features good graphics. You will probably need to map your way because the castle has several floors, each with many rooms. You can expect to play a long time before you master this game.

$39.95, color. (Doesn't work on Mega.) Mindscape, Inc., 3444 Dundee Road, Northbrook, IL 60062. (800) 221-9884.

INDIANA JONES: TEMPLE OF DOOM

Indiana Jones and the Temple of Doom is an adventure/arcade game in which you must use a joystick to guide the hero through three increasingly difficult scenarios to achieve a variety of goals, culminating in recovering the three stones of Sankara from the Pankot Palace. On the way you must deal with enemy guards, traps, cobras and the evil High Priest, Mola Ram. The game is fun, but extremely frustrating.

Rescue the kidnapped children, recover the stones of Sankara and defeat Mola Ram, the high priest—just like the movie.

As in the movie, the children of the village of Mayapore have disappeared, as have the three stones which brought prosperity to the village. You must rescue the children, recover the stones and defeat Mola Ram.

As the game begins, Indiana Jones is standing outside the mine tunnels. You have the choice of entering one of three mine shafts, labeled Easy, Medium and Hard. The inside of the caves consists of flat plateaus connected by ladders and it's easy to get lost in the maze. At various places there are children locked in cages, whom Indy can free by using his trusty bullwhip on the cage.

You can also use the whip on bats, cobras and guards, although it merely stuns the guards—but you can eliminate future threats by knocking a stunned guard over the ledge. Mola Ram also pops up occasionally and throws fireballs—*tracking* fireballs, no less. You can whip the fireball or Mola Ram. Being touched by any of these dangers uses up a life and sends you back to an earlier place in the cave.

Eventually you'll locate the entrance to the mine tunnels, and thus begins the most difficult portion of the game. You must guide your mine car down the rails to reach the Temple of Doom. Missing sections of track, obstacles and cars full of guards all stand in your way. One wrong move and the game is over. You can accelerate and slow down, steer the car and even tilt it up on two wheels.

At the Temple of Doom, Indy must negotiate the drawbridge over the lava pits to recover the first stone. If he's successful, it's back to the first level for two more trips through the game until all three stones are recovered—at which time Indy can win by escaping across the rope bridge. Of course, Mola Ram will be throwing fireballs for all he's worth.

The graphics and sound are adequate and Indy is easy to control, but you can't pause or save a game. And the biggest problem is that the game may not be interesting enough to hold your attention.—DAVID PLOTKIN

$49.95, color. Mindscape, 3444 Dundee Road, Northbrook, IL 60062. (312) 480-7667.

SOFTWARE DISCOUNTERS OF AMERICA

S.D. of A.

For Orders Only—1-800-225-7638
PA Orders—1-800-223-7784
Customer Service 412-361-5291

- Free shipping on orders over $100 in continental USA
- No Surcharge for VISA/MasterCard
- Your card is not charged until we ship

ABACUS BOOKS
- ST Disk Drives ... $19
- ST Gem Prog. Ref. ... $15
- ST Graphics & Sound ... $15
- ST Internals ... $15
- ST 3-D Graphics ... $19
- ST Tricks & Tips ... $15

ACADEMY
- Typing Tutor ST ... $23

ACCESS
- Leader Board Golf ST ... $25
- Leader Board Golf & Tourn. Disk(D) ... $9.88
- Tenth Frame ST ... $25
- Triple Pack: BH1, BH2, Raid Over Moscow (D) ... $14

ACCOLADE
- Bubble Ghost ST ... $23
- Hardball ST ... $25
- Mini Putt ST ... Call
- Pinball Wizard ST ... $23
- Test Drive ST ... $25

ACTIVISION
- Cross Country Road Race (D) ... $9.88
- Ghostbusters (D) ... $9.88
- Music Studio ST ... $33
- Music Studio (D) ... $23
- Pitfall/Demon Attack (D) $9.88

AEGIS
- Animator ST ... $44
- Art Pak#1 ST ... $19

AMERICAN EDUCATION
- Biology (D) ... $12
- Grammar (D) ... $12
- Science (D) ... Call
- U.S. Geography (D) ... $12
- U.S. History (D) ... $12
- Vocabulary (D) ... $12
- World History (D) ... $12

ANTIC
- Base Two ST ... $39
- Cyber Paint 2.0 ST ... $49
- Cyber Studio ST ... $59
- Flash ST ... $19
- Phasar 3.0 ST ... $59
- Spectrum 512 ST ... $44
- 3D Breakthru ST ... $25

ARTWORX
- Bridge 5.0 ST ... $23
- Cycle Knight (D) ... $14
- Linkword French (D) ... $16
- Linkword French 1 or 2 ST ... $19 Ea.
- Linkword German (D) ... $16
- Linkword Russian ST ... $19
- Linkword Spanish (D) ... $16
- Linkword Spanish ST ... $19
- Strip Poker (D) ... $21
- Strip Poker ST ... $25
- Female Data Disk 1(D) ... $14
- Male Data Disk 2(D) ... $14
- Female Data Disk 3(D) ... $14
- Female Data Disk#4 ST ... $14
- Female Data Disk#5 ST ... $14

AVALON HILL
- Spitfire '40 (D) ... $23
- Spitfire '40 ST ... $23

AVANTE GARDE
- PC Ditto ST ... Call

BATTERIES INCLUDED
- Degas Elite ST ... $39
- Thunder: Writers Assistant ST ... $26

BAUDVILLE
- Award Maker Plus ST ... $25
- Blazing Paddles (D) ... $23
- Rainy Day Games (D) ... $19
- Video Vegas ST ... $23
- Video Vegas (D) ... $19

BRODERBUND
- Karateka (D) ... $9.88
- Loderunner (D) ... $9.88
- Print Shop (D) ... $26
- Print Shop Graphics Library#1, #2, #3 (D) $16. Ea.
- P.S. Companion 64K (D) ... $23
- Super Bike Challenge ST ... $14

CENTRAL POINT
- Copy 2 ST ... $23

CINEMAWARE
- Defender of the Crown ST $33
- S.D.I. ST ... $33

DATA EAST
- Ikari Warriors ST ... $25
- Karnov ST ... $25
- Lock On ST ... $25
- Platoon ST ... Call
- Speed Buggy ST ... $25

DATASOFT
- Alternate Reality: The City (D) ... $19
- The City ST ... $26
- The Dungeon (D) ... $26
- Battle Droidz ST ... Call
- Bismarck ST ... $26
- Global Commander ST ... $26
- Hunt for Red October ST ... $32
- Tomahawk 64K (D) ... $21
- Video Title Shop 64K (D) ... $21

DAVIDSON
- Math Blaster (D) ... $32
- Spell It (D) ... $32
- Word Attack (D) ... $32

ELECTRONIC ARTS
- Software Classic Series:
- Archon 2 (D) ... $9.88
- Lords of Conquest (D) ... $9.88
- Movie Maker (D) ... $9.88
- Music Const. Set (D) ... $9.88
- Pinball Const. Set (D) ... $9.88
- Seven Cities of Gold (D) $9.88
- Super Boulder Dash (D) ... $9.88

ELECTRONIC ARTS
- Alien Fires ST ... $26
- Arcticfox ST ... $29
- Bard's Tale ST ... $32
- Chessmaster 2000 (D) ... $26
- Chessmaster 2000 ST ... $29
- Empire ST ... $32
- Lords of Conquest ST ... $14
- Marble Madness ST ... $26
- Mavis Beacon Teaches Typing ST ... $32
- Music Const. Set ST ... $32
- Roadwars ST ... $21
- Rockford ST ... $21
- Scrabble ST ... $26
- Scruples ST ... $26
- Star Fleet 1 ST ... $35

EPYX
- Ballblazer 64K (D) ... $6.88
- Battleship ST ... Call
- Boulder Dash Const. Kit (D) or ST ... $14
- California Games ST ... $33
- Champ. Wrestling ST ... $14
- Dive Bomber ST ... Call
- Dragonriders of Pern(D) $6.88
- Final Assault ST ... $33
- Impossible Mission 2 ST ... Call
- Metrocross ST ... $16
- Pitstop 1 or 2(D) ... $6.88 Ea.
- Spy vs. Spy 3: Arctic Antics (D) ... $14
- Street Cat ST ... $16
- Summer Games (D) ... $14
- Technocop ST ... Call
- Temple Apshai Trilogy (D) ... $14
- Temple Apshai Trilogy ST ... $14
- Winter Games ST ... $14
- World Games ST ... $14

FORESIGHT
- Draphix ST ... $119

FTL
- Dungeonmaster ST ... $25
- Dungeonmaster Hints ... $9
- Oids ST ... $23
- Sundog ST ... $23

GAMESTAR
- Champ. Football ST ... $25

GRIBNIF
- Neo Desk ST ... $19

HIGH-TECH EXPRESSIONS
- Astro-Grover (D) ... $6.88
- Award Ware (D) ... $9.88
- Big Bird's Spc. Delivery (D) $6.88
- Ernie's Magic Shapes (D) $6.88
- Print Power (D) ... $9.88
- Sesame St. Print Kit (D) ... $9.88
- *All Hi-Tech req. 64K!

ICD
- PR Connection ... $59
- Rambo XL ... $29
- US Doubler: with Sparta DOS ... $49
- without Sparta DOS ... $29

INTERSECT
- Interlink ST ... $25

ISD
- Masterplan ST ... $59
- ST Account 2.0 ST ... $89
- Vip Professional ST ... $95

LDW
- Basic Compiler 2.0 ST ... $59
- Club Backgammon ST ... $23
- Vegas Craps ST ... $23
- Vegas Gambler ST ... $23

MASTERTRONIC
- Action Biker (D) ... $4.88
- Chopper X ST ... $14
- Ninja (D) ... $4.88
- Ninja Mission ST ... $14
- Speed King (D) ... $4.88
- The Last V8 (D) ... $4.88
- Vegas Poker & Jackpot(D) ... $4.88

MICHTRON
- Airball ST ... $25
- Airball Const. Set ST ... $16
- GFA Artist ST ... $49
- GFA Basic Book ST ... $25
- GFA Basic Int. ST ... Call
- GFA Basic Compiler ST ... $39
- GFA Companion ST ... $33
- Goldrunner 2 ST ... $25
- Int'l. Soccer ST ... $25
- Juggler ST ... $33
- Karate Kid 2 ST ... $25
- Leatherneck ST ... $25
- Master CAD ST ... $129
- Slaygon ST ... $25
- ST Replay ... $69
- Stuff ST ... $25
- Tanglewood ST ... $25
- Time Bandit ST ... $25
- Tune Up ST ... $33

MICROLEAGUE
- Baseball (D) ... $25
- Baseball 2 ST ... $39
- Box Score Stats (D) ... $16
- General Manager (D) or ST ... $19
- 1987 Team Data (D) or ST $14

MICROPROSE
- F15 Strike Eagle (D) ... $23
- F15 Strike Eagle ST ... $25
- Gunship ST ... $33
- Silent Service (D) ... $23
- Silent Service ST ... $25

MINDSCAPE
- Balance of Power ST ... $33
- Blockbuster ST ... $25
- Bop & Wrestle 64K (D) ... $19
- Captain Blood ST ... $33
- De Ja Vu ST ... $33
- *Deeper Dungeons (D) ... $16
- Gauntlet ST ... $33
- Gauntlet 64K (D) ... $23
- Harrier Combat Sim. ST ... $33
- Indiana Jones & The Temple of Doom ST ... $33
- Infiltrator 64K (D) ... $19
- Into the Eagle's Nest ST ... $25
- Paperboy ST ... Call
- Road Runner ST ... $33
- Shadowgate ST ... $33
- Super Star Hockey ST ... $33
- Uninvited ST ... $33
- *Requires Gauntlet!

NEOTRON
- Fontz ST ... $23
- Word Up ST ... $49

OMNITREND
- Breach ST ... $25
- Breach Scenario Disk ST ... $16
- Universe 2 ST ... $33

ORIGIN
- Autoduel (D) or ST ... $33
- Moebius ST ... $39
- Ultima 3 (D) or ST ... $25
- Ultima 4 (D) or ST ... $39

PROGRESSIVE
- Superbase Professional ST $189

QMI
- Desk Cart ST ... $69

RAINBIRD
- Black Lamp ST ... $19
- Carrier Command ST ... $29
- Guild of Thieves ST ... $29
- Jinxter ST ... $25
- Starglider 2 ST ... $29
- The Pawn ST ... $19
- Universal Military Simulator ST ... $33

SIERRA
- Black Cauldron ST ... $25
- King's Quest 1, 2, or 3 ST ... $33 Ea.
- Leisure Suit Larry ST ... $25
- Mixed-Up Mother Goose ST $19
- Police Quest ST ... $33
- Space Quest 1 or 2 ST $33 Ea.
- Winnie the Pooh ST ... $16

SIMON & SCHUSTER
- Star Trek ST ... $25

SOFTLOGIC
- Font Disk #1 or #2 ST. $19 Ea.
- Publishing Partner ST ... $59
- Publishing Partner Professional ST ... $129

SOFTREK
- Turbo ST ... $33

SPRINGBOARD
- Certificate Maker ST ... $25
- C.M. Library#1 ST ... $19
- Newsroom 64K (D) ... $33

SSI
- Advanced Dungeons & Dragon: Heroes of the Lance ST ... $26
- Phantasie 1, 2 or 3 ST ... $26
- Rings of Zilfin ST ... $26
- Roadwar Europa ST ... $29
- Roadwar 2000 ST ... $26
- Stellar Crusade ST ... $39
- War Game Const. Set (D) ... $19
- War Game Const. Set ST ... $23
- Wizard's Crown (D) or ST $26

SUBLOGIC
- Flight Sim. 2 (D) or ST $33 Ea.
- F.S. Scenery Disks ... Call

THREE SIXTY
- Dark Castle ST ... $25
- Warlock ST ... $23

THUNDER MOUNTAIN
- Tau Ceti: The Lost Star Colony ST ... $9.88
- Top Gun ST ... $9.88
- Winter Challenge ST ... $9.88
- Wizball ST ... $9.88

TIMEWORKS
- Data Manager ST ... $49
- Desktop Publisher ST ... $87
- Partner ST ... $33
- Swiftcalc ST ... $49
- Word Writer ST ... $49

UNICORN
- Decimal Dungeon ST ... $23
- Fraction Action ST ... $23
- Math Wizard ST ... $23
- Read & Rhyme ST ... $23

UNISON WORLD
- Art Gallery: Fantasy ST ... $19
- Art Gallery 1 or 2 ST . $19 Ea.
- Print Master Plus ST ... $25
- P.M. Fonts & Borders ST ... $23

VERSASOFT
- dB Man V4.0 ST ... $149

MARK WILLIAMS
- C Source Dedugger ST ... $44
- Mark Williams C ST ... $119

WORD PERFECT
- WP Word Processor ST ... $199

ACCESSORIES
- Bonus 5¼ SS, DD ... $4.99 BX
- Bonus 5¼ DS, DD ... $5.99 BX
- Compuserve Starter Kit ... $19
- Disk Drive Cleaner ... $6.88
- Dow Jones Starter Kit ... $19
- Epyx 500 XJ Joystick ... $14
- Indus GT Drive ... Call
- Supra Hard Drives ... Call
- Wico Bat Handle ... $17
- Wico Ergostick ... $19

Datasoft®

for the ATARI ST!

As captain of Russia's newest state-of-the-art sub your goal is to cross the Atlantic and rendevous with the American navy. The Russians are after you and will do anything they can to keep your boat from falling into U.S. hands—even sink you if necessary.

Maps, sonar sweeps, periscope and recognition charts make your escape easier, but using them may also give away your position. Some tough decisions will be yours as you become more proficient in submarine captaincy.

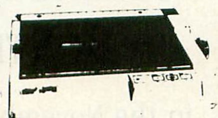
Our Discount Price $32



P.O. BOX 111327 — DEPT. AT — BLAWNOX, PA 15238

*Please Read The Following Ordering Terms & Conditions Carefully Before Placing Your Order: Orders with cashiers check or money order shipped immediately on in stock items! Personal & Company checks, allow 3 weeks clearance. No C.O.D.'s! Shipping: Continental U.S.A.-Orders under $100 add $3; free shipping on orders over $100. AK, HI, FPO, APO-add $5 on all orders. Canada & Puerto Rico-add $10 on all orders. Sorry, no other International orders accepted! PA residents add 6% sales tax on the total amount of order including shipping charges. CUSTOMER SERVICE HOURS: Mon.-Fri. 9 AM-5:30 PM Eastern Time. REASONS FOR CALLING CUSTOMER SERVICE—412-361-5291 (1)Status of order or back order (2)if any merchandise purchased within 60 days from S.D.of A. is defective, please call for a return authorization number. We will not process a return without a return auth. #! Defective merchandise will be replaced with the same merchandise only. Other returns subject to a 20% restocking charge! After 60 days from your purchase date, please refer to the warranty included with the product purchased & return directly to the manufacturer. Customer service will not accept collect calls or calls on S.D.of A.'s 800# order lines! Prices & availability are subject to change! New titles are arriving daily! Please call for more information. NEW, MORE CONVENIENT ORDER LINE HOURS: Mon.-Thurs. 8:30 AM-7:00 PM Fri. 8:30 AM-5:30 PM Sat. 10:00 AM-4:00 PM Eastern Time.





NX-1000

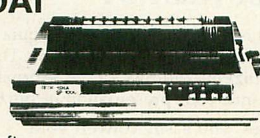
- 144 cps Draft
- 36 cps NLQ
- EZ Font Panel Control

$165.95*

* w/cable purchase

NX-1000 Rainbow Color Printer $225.95

SEIKOSHA SP-180AI



- 100 cps Draft
- 20 cps NLQ
- Std, Par, and IBM Graphics Compatible

Quantities Limited

$125.95

Panasonic Office Automation 1080i Model II

- 150 cps Draft Mode
- NLQ Mode
- Friction & Tractor Feed

$159.95

(2-Year Warranty)

PRINTERS

Star Micronics Inc

NX-1000	$165.95*
NX-1000 Color	$225.95
NX-15	$289.95
NR-10	$319.95
NR-15	$419.95
NB-15 24 Pin	$669.95
NX-2400	$309.95
NB24-10 24 Pin	$399.95
NB24-15 24 Pin	$545.95
Laser 8	$1759.95
ND-15	$349.95
NL-10	$149.95

*w/cable purchase

Toshiba

321SL	$489.95
341 SL	$659.95
P351 Model II	$899.95
351 SX 400 cps	$979.95

SEIKOSHA

SP 180Ai	$125.95*
SP 1200Ai	$159.95
SP 1200AS RS232	$159.95
SL 80Ai	$289.95
MP5420FA	$999.95
SP Series Ribbon	$7.95
SK3000 Ai	$339.95
SK3005 Ai	$419.95
SPB 10	$CALL
SL 130Ai	$599.95

* Quantities Limited

BROTHER

M1109	$159.95
M1509	$335.95
M1709	$459.95
Twinwriter 6 Dot & Daisy	$899.95
M1724L	$619.95
HR20	$345.95
HR40	$559.95
HR60	$649.95

EPSON

LX800	$184.95
FX86E	$329.95
FX286E	$424.95
EX800	$399.95
LQ500	$339.95
LQ2500	$789.95
GQ3500	$LOW
LQ850	$525.95
LQ1050	$699.95



Attention Educational Institutions:

If you are not currently using our educational service program, please call our representatives for details.

Panasonic Office Automation

1080i Model II	$159.95
1091i Model II	$189.95
1092i	$299.95
1592	$375.95
1595	$419.95
3131	$289.95
3151	$459.95
KXP 4450 Laser	$1649.95
1524 24 Pin	$529.95
Fax Partner	$579.95
Optical Scanner	$859.95

CITIZEN

120 D	$149.95
180 D	$169.95
MSP-10	$259.95
MSP-40	$289.95
MSP-15E	$335.95
MSP-50	$399.95

OKIDATA

Okimate 20	$129.95
Okimate 20 w/cart	$189.95
180	$219.95
182	$209.95
182+	$225.95
183	$239.95
292 w/interface	$449.95
293 w/interface	$585.95
294 w/interface	$819.95
393	$955.95
Lazer 6	$CALL
390	$479.95
391	$649.95
320	$345.95
321	$445.95

Interfacing available for IBM C 64, Apple and Atari

ATARI

Access:

Triple Pack	$11.95
Leader Board Pack	$9.99

Activision:

Music Studio	$19.95
Solid Gold Vol.#1	$10.95

Batteries Included:

Paperclip 80 Col	$31.95

Broderbund:

Print Shop	$25.95
Print Shop Compan.	$22.95
Graphic Lib. I, II, III	$13.95
Bank St. Writer	$27.95

Electronic Arts:

Pinball Con Set	$8.95
Lords of Conquest	$8.95
Starfleet I	$32.95
Chess Master 2000	$25.95
Music Con Set	$8.95
Super Boulderdash	$8.95
One on One	$8.95

Microleague:

Microleag. Baseball	$22.95
General Manager	$16.95
Stat Disk	$13.95
'87 Team Disk	$13.95

Microprose:

Conflict in Vietnam	$22.95
F-15 Strike Eagle	$19.95
Kennedy Approach	$13.95

ATARI ST

Access:

Leader Board	$22.95
Tournament #1	$11.95
10th Frame	$22.95

Activision:

Champion. Baseball	$22.95
GFL Football	$22.95
Music Studio	$27.95
GBA Basketball	$22.95
Beyond Zork	$28.95
Zork Trilogy	$27.95

Broderbund:

Superbike Challenge	$11.95

Electronic Arts:

Arctic Fox	$25.95
Starfleet I	$32.95
Chess Master 2000	$25.95
Gridiron	$32.95
Marble Madness	$23.95

Epyx:

Sub Battle Simulator	$22.95
World Games	$22.95
Wrestling	$11.95
Winter Games	$11.95

Firebird:

Pawn	$13.95
Starglider	$25.95
Golden Path	$11.95
Guild of Thieves	$25.95
Tracker	$11.95

ATARI ST

Microleague:

Microleague Baseball	$33.95
General Manager	$16.95
Wrestling	$25.95

Microprose:

Silent Service	$22.95
F-15 Strike Eagle	$24.95
Gunship	$28.95

Strategic Simulations:

Phantasie	$22.95
Phantasie II	$22.95
Wargame Con. Set	$19.95
Phantasie III	$22.95

Sublogic:

Flight Simulator II	$30.95
Scenery Disk	$14.95

Timeworks:

Wordwriter ST	$44.95
Partner ST	$27.95
Data Manager ST	$44.95

Unison World:

Art Gallery 1 or 2	$14.95
Print Master	$19.95
Fonts & Borders	$17.95
Art Gallery Fantasy	$13.95

We stock over 3,000 software titles!

Monitors

Thomson:

230 Amber TTL/12"	$69.95*
4120 CGA	$199.95
4160 CGA	$199.95

Blue Chip:

BCM 12" Green TTL	$64.95
BCM 12" Amber TTL	$69.95

NEC

Multisync II	$589.95

Magnavox:

BM7652	$79.95
BM7622	$79.95
7BM-613	$79.95
7BM-623	$79.95
CM8502	$179.95
CM8505	$199.95
9CM-053	$CALL
CM8762	$245.95
8CM-515	$259.95
CM9043	$CALL
8CM-873	$499.95

Modems

Avatex:

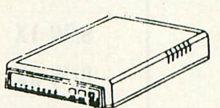
1200e	$65.95
1200i PC Card	$65.95
1200p	$89.95
1200hc Modem	$79.95*
2400	$149.95
2400i PC Card	$139.95

*w/cable purchase

Hayes:

Smartmodem 300	$139.95
Smartmodem 1200	$279.95
Smartmodem 2400	$419.95

Avatex™ 1200E



$65.95

Join the thousands who shop Lyco and Save

COMING NEXT MONTH

in the November 1988

ANTIC

Dr. Brilliant's INCREDIBLE ATARI BRAIN TRANSPLANTS! The Complete Guide to 8-Bit Memory Upgrades

Lightspeed C
Ratcliff's review (and programs)

Enhanced Data-X, Rev. B

Beautiful screen docs printed out effortlessly

Antic Dissassembler: Super Disk Bonus

RAMdisk Protector type-in



SOFTWARE LIBRARY

DISK SUBSCRIBERS: Programs for 8-bit Atari computers can be used immediately. Just follow instructions in the accompanying magazine articles. ST Owners: See monthly disk's ST Help File for instructions on how to transfer programs to 3-1/2 inch disk.

DOS COMPATIBILITY: All 8-bit programs published by **Antic** are tested to work with Atari Disk Operating System (DOS) 2.0S and 2.5—*not* with the incompatible DOS 3.0. DOS 2.0S is available on each Antic Monthly Disk. Copy the DOS.SYS and DUP.SYS files.

TYPING SPECIAL ATARI CHARACTERS

Antic printed program listings leave a small space between each Atari Special Character for easier reading. Immediately below you will see the way **Antic** prints all the standard Atari letters and numbers, in upper and lower case, in normal and inverse video.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789 0123456789

The Atari Special Characters and the keys you must type in order to get them are shown in the two boxes below.

NORMAL VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	CTRL ,		CTRL S
	CTRL A		CTRL T
	CTRL B		CTRL U
	CTRL C		CTRL V
	CTRL D		CTRL W
	CTRL E		CTRL X
	CTRL F		CTRL Y
	CTRL G		CTRL Z
	CTRL H		ESC ESC
	CTRL I		ESC CTRL −
	CTRL J		ESC CTRL =
	CTRL K		ESC CTRL +
	CTRL L		ESC CTRL *
	CTRL M		CTRL .
	CTRL N		CTRL ;
	CTRL O		SHIFT =
	CTRL P		ESC SHIFT CLEAR
	CTRL Q		ESC DELETE
	CTRL R		ESC TAB

INVERSE VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	人 CTRL ,		CTRL X
	人 CTRL A		CTRL Y
	人 CTRL B		CTRL Z
	人 CTRL C		ESC SHIFT DELETE
	人 CTRL D		ESC SHIFT INSERT
	人 CTRL E		ESC CTRL TAB
	人 CTRL F		ESC SHIFT TAB
	人 CTRL G		人 CTRL .
	人 CTRL H		人 CTRL ;
	人 CTRL I		人 SHIFT =
	人 CTRL J		ESC CTRL 2
	人 CTRL K		ESC CTRL DELETE
	人 CTRL L		ESC CTRL INSERT
	人 CTRL M		
	人 CTRL N		
	人 CTRL O		
	人 CTRL P		
	人 CTRL Q		
	人 CTRL R		
	人 CTRL S		
	人 CTRL T		
	人 CTRL U		
	人 CTRL V		
	人 CTRL W		

Whenever the CONTROL key (CTRL on the 400/800) or SHIFT key is used, *hold it down* while you press the next key. Whenever the ESC key is pressed, *release* it before you type the next key.

Turn on inverse video by pressing the Reverse Video Mode Key. Turn it off by pressing it a second time. (On the 400/800, use the Atari Logo Key 人 instead.)

Among the most common program typing mistakes are switching certain capital letters with their lower-case counterparts—you need to look especially carefully at P, X, O and 0 (zero).

Some of Atari Special Characters are not easy to tell apart from standard alpha-numeric characters. Usually the Special Characters will be boxed. Compare the two sets of characters below:

SPECIAL			STANDARD		
		CTRL F	/		/
		CTRL G			SHIFT +
		CTRL N	—		SHIFT −
		CTRL R	-		−
		CTRL S	+		+

TYPO II—Proofreading Programs Automatically

TYPO II automatically proofreads **Antic**'s type-in BASIC listings for 8-bit Atari computers. It finds the exact line where you made a program typing mistake.

Type in TYPO II and SAVE a copy to disk or cassette. Now type GOTO 32000. When you see the instruction on the screen, type in a single program line **without the two-letter TYPO II code** at the left of the line number. Press the [RETURN] key.

Your line will reappear at the bottom of the screen with a two-letter TYPO II code on the left. If this code is not exactly the same as the line code printed in the magazine, you mistyped something in that line.

To call back any line previously typed, type an asterisk [*] followed (without in-between spaces) by the line number, then press [RETURN]. When the complete line appears at the top of the screen, press [RETURN] again. This is also the way you use TYPO II to proofread itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000.

To remove TYPO II from your program, type LIST "D:FILENAME",0,31999 [RETURN] (Cassette owners LIST "C:). Type NEW, then ENTER "D:FILENAME"[RETURN](Cassette—ENTER "C:). Your program is now in memory without TYPO II and you can SAVE or LIST it to disk or cassette.

Don't type the TYPO II Codes!

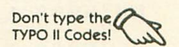
```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
   SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "K":POSITION 11,1:? "TYPO II"
EM 32050 TRAP 32040:POSITION 2,3:? "Type
   in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2;LINE
   $:IF LINE$="" THEN POSITION 2,4:LIST B
   :GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
   E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
   GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "K":POSITION 11,1:? "TYPO II
   ":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3;LINE$:IF
   LINE$="" THEN ? "LINE ";B;" DELETED":G
   OTO 32050
VV 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
   ANS+(C*ASC(LINE$(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$
   (LCODE)
VG 32220 POSITION 2,13:? "If CODE does no
   t match press RETURN and edit line a
   bove.":GOTO 32050
```

learn russian chemistry vocabulary—or anything else!

QUIZZER

Article on page 18

LISTING 1




```
FK 1 REM QUIZZER
OS 2 REM BY ANDREW R. THOMAS
QR 3 REM (c)1988, ANTIC PUBLISHING
HU 10 GOTO 1000
AM 99 REM SUBROUTINES
LC 100 VADRH=INT(VADR/256):VADRL=VADR-VAD
   RH*256
ZM 105 RETURN
PI 200 REM E->R SCREEN
LT 205 POKE 559,0
YB 210 POKE 1700+3,66:POKE 1700+25,194
FL 215 POKE 512,146:POKE 513,6
XA 220 POKE 559,34:RETURN
OB 230 REM R->E SCREEN
LZ 235 POKE 559,0
BU 240 POKE 1700+3,194:POKE 1700+25,66
FR 245 POKE 512,146:POKE 513,6
XG 250 POKE 559,34:RETURN
AG 300 REM ENG FIND
IE 310 WPOS=1
ZM 320 IF PAIR=0 THEN 340
TR 330 FOR IT=1 TO PAIR:WPOS=WPOS+ASC(ENG
   $(WPOS,WPOS))+1:NEXT IT
NK 340 LW=ASC(ENG$(WPOS,WPOS)):W$=ENG$(WP
   OS+1,WPOS+LW):RETURN
MO 400 REM RUS FIND
IF 410 WPOS=1
AH 420 IF PAIR=0 THEN 440
NF 430 FOR IT=1 TO PAIR:WPOS=WPOS+ASC(RUS
   $(WPOS,WPOS))+1:NEXT IT
RZ 440 LW=ASC(RUS$(WPOS,WPOS)):W$=RUS$(WP
   OS+1,WPOS+LW):RETURN
BJ 800 REM DL
AT 805 DATA 112,112,96,194,64,152,7,2,71,
   184,152,66,204,152,112,130,7,2,7,2,7,2
   ,71,228,153,66,248,153
CO 806 DATA 0,2,2,2,65,164,6
HH 809 REM DLI
AG 810 DATA 72,169,224,141,9,212,169,146,
   141,0,2,141,10,212,104,64
CW 1000 REM VARS
YE 1005 DIM EBAR$(7),RBAR$(6),ABAR$(6),OB
   AR$(5),CBAR$(6),PBAR$(6)
JL 1010 DIM ZBAR$(38),NBAR$(38),BAR$(38),
   KBAR$(34),BBAR$(39)
BC 1015 DIM ENG$(10000),RUS$(10000)
PR 1020 DIM W$(19),QW$(19),AW$(19),ANS$(1
   9)
```

continued on next page

```
QY 1025 DIM FILE$(14),FILE1$(14)
DA 1030 EBAR$="ENGLISH":RBAR$="RYSSKO":AB
   AR$="ANSWER":OBAR$="OTVET"
UG 1031 CBAR$="RIGHT!":PBAR$="PRAVO!"
PY 1032 ZBAR$="  Load       Add
      End"
JB 1033 NBAR$="  Load Save Add       Qui
   z     End"
GH 1034 BAR$="  Load Save Add Delete Quiz
    Tally End"
MI 1035 KBAR$="          <<Press Space to Con
   tinue>>"
YR 1036 BBAR$="
                "
DT 1050 FOR IT=0 TO 34:READ VAR:POKE 1700
   +IT,VAR:NEXT IT
GS 1060 FOR IT=0 TO 15:READ VAR:POKE 1664
   +IT,VAR:POKE 1682+IT,VAR:NEXT IT
KB 1061 POKE 1682+7,128
WN 1080 NP=0
WM 1090 POKE 752,1:POKE 764,255:? "Rando
   m or Consecutive?"
BH 1091 IF PEEK(764)=255 THEN 1091
YM 1092 VAR=PEEK(764):IF  NOT (VAR=104 OR
    VAR=40 OR VAR=82 OR VAR=18) THEN POKE
    764,255:GOTO 1090
UM 1093 IF VAR=104 OR VAR=40 THEN ORDER=1
   :GOTO 1100
SU 1094 ORDER=2:PAIR=-1
ZW 1100 REM C-SET
YN 1101 RAMTOP=PEEK(106)-4:POKE 106,RAMTO
   P:GRAPHICS 0
LO 1104 POKE 1682+2,RAMTOP:CLOSE #1
KE 1110 OPEN #1,4,0,"D:CYRILL.FNT"
ZO 1120 CHBAS=RAMTOP*256
JS 1130 VADR=CHBAS:GOSUB 100
AP 1135 POKE 848+4,VADRL:POKE 848+5,VADRH

IL 1140 VADR=1024:GOSUB 100
HY 1145 POKE 848+8,VADRL:POKE 848+9,VADRH

DB 1150 POKE 848+2,7
NL 1160 VAR=USR(ADR("h LV")):CLOSE #1
UU 1200 REM START
DS 1210 POKE 559,0:POKE 54286,192
NO 1215 POKE 512,146:POKE 513,6
QY 1220 POKE 560,164:POKE 561,6
FJ 1225 POKE 710,0:POKE 82,0:POKE 559,34
OZ 1240 POKE 752,1
QB 2000 REM CHOICE
LL 2005 ? ""
FV 2010 POKE 764,255
EE 2020 POSITION 0,14
GB 2030 IF NP=0 THEN ? ZBAR$;:GOTO 2050
BN 2035 IF TIDS=0 THEN ? NBAR$;:GOTO 2050

JD 2040 ? BAR$;
QS 2050 VAR=PEEK(764):IF VAR=255 THEN 205
   0
HB 2055 POKE 764,255
VH 2060 IF VAR=64 OR VAR=0 THEN 3000
GG 2065 IF (VAR=126 OR VAR=62) AND NP>0 T
   HEN 4000
PQ 2070 IF VAR=127 OR VAR=63 THEN 5000
WW 2080 IF (VAR=122 OR VAR=58) AND NP>0 A
   ND TIDS>0 THEN 6000
KF 2090 IF (VAR=111 OR VAR=47) AND NP>0 T
   HEN 7000
ZJ 2100 IF (VAR=109 OR VAR=45) AND NP>0 A
   ND TIDS>0 THEN 8000
XV 2110 IF VAR=106 OR VAR=42 THEN 31000
PV 2120 GOTO 2050
PR 3000 REM LOAD
BT 3010 POSITION 0,12:? BBAR$;
TL 3015 POSITION 0,12:? "File";:INPUT FIL
   E$
HT 3020 IF FILE$="" THEN 2000
TI 3025 GOSUB 3500:TRAP 3300:CLOSE #1
BV 3030 OPEN #1,4,0,FILE$:TRAP 40000
KS 3040 INPUT #1,NP:INPUT #1,LENG:INPUT #
   1,LRUS
TG 3045 ENG$(LENG,LENG)="":RUS$(LRUS,LRU
   S)=""
BX 3050 VADR=LENG:GOSUB 100
FU 3060 POKE 848+2,7:POKE 848+8,VADRL:POK
   E 848+9,VADRH
EM 3070 VADR=ADR(ENG$):GOSUB 100
BB 3075 POKE 848+4,VADRL:POKE 848+5,VADRH

YB 3080 VAR=USR(ADR("h LV"))
SI 3090 VADR=LRUS:GOSUB 100
GU 3100 POKE 848+8,VADRL:POKE 848+9,VADRH

XN 3110 VADR=ADR(RUS$):GOSUB 100
ZU 3120 POKE 848+4,VADRL:POKE 848+5,VADRH

NE 3130 VAR=USR(ADR("h LV")):CLOSE #1
NL 3220 GOTO 2000
CG 3300 CLOSE #1:TRAP 40000
DL 3310 POSITION 0,12:? "Can't load ";FIL
   E$
CU 3320 POSITION 0,13:? BBAR$;
OD 3330 GOTO 2010
HD 3500 LF=LEN(FILE$)
PT 3510 IF LF>1 THEN IF FILE$(1,2)="D:" T
   HEN 3600
FU 3520 IF LF>2 THEN IF FILE$(1,1)="D" AN
   D FILE$(3,3)=":" THEN 3600
RH 3530 FILE1$="D:":FILE1$(3)=FILE$:FILE$
   =FILE1$
AN 3600 RETURN
WR 4000 REM SAVE
BU 4010 POSITION 0,12:? BBAR$;
TM 4015 POSITION 0,12:? "File";:INPUT FIL
   E$
HU 4020 IF FILE$="" THEN 2000
UF 4025 GOSUB 3500:TRAP 4300:CLOSE #1
EA 4030 OPEN #1,8,0,FILE$:TRAP 40000
GZ 4040 ? #1,NP
YS 4050 LENG=LEN(ENG$):LRUS=LEN(RUS$)
TL 4060 ? #1;LENG:? #1;LRUS
CE 4070 VADR=LENG:GOSUB 100
OU 4080 POKE 848+2,11:POKE 848+8,VADRL:PO
   KE 848+9,VADRH
ET 4090 VADR=ADR(ENG$):GOSUB 100
BI 4095 POKE 848+4,VADRL:POKE 848+5,VADRH

XG 4100 VAR=USR(ADR("h LV"))
RN 4110 VADR=LRUS:GOSUB 100
HB 4120 POKE 848+8,VADRL:POKE 848+9,VADRH

XU 4130 VADR=ADR(RUS$):GOSUB 100
AB 4140 POKE 848+4,VADRL:POKE 848+5,VADRH

XV 4150 VAR=USR(ADR("h LV"))
MQ 4200 CLOSE #1
BY 4210 POSITION 0,12:? BBAR$;
NM 4220 GOTO 2000
CH 4300 CLOSE #1:TRAP 40000
VK 4310 POSITION 0,12:? "Can't save ";FIL
   E$
CV 4320 POSITION 0,13:? BBAR$;
OE 4330 GOTO 2010
AG 5000 REM ADD
FS 5020 ? "":GOSUB 200
PD 5030 POKE 1709,184
KW 5040 POSITION 9-INT(0.5*LEN(EBAR$)),1:
   ? EBAR$
UT 5045 POSITION 0,3:INPUT QW$
BN 5050 IF QW$="" THEN 2000
IA 5055 LET LENG=LEN(QW$):IF LENG>19 THEN
    POSITION 13,12:? "Word too large";:GO
   TO 2010
UT 5060 POSITION 29-INT(0.5*LEN(RBAR$)),5
   :? RBAR$
IF 5065 POSITION 0,7:INPUT AW$
WF 5070 IF AW$="" THEN 2000
CC 5075 LRUS=LEN(AW$):IF LENG>19 THEN POS
   ITION 13,12:? "Word too large";:GOTO 2
   010
HV 5080 LET LENG=LEN(ENG$):LRUS=LEN(RUS$)

OL 5090 LQW=LEN(QW$):LAW=LEN(AW$)
JA 5100 IF LENG+LQW+1>10000 OR LRUS+LAW+1
   >10000 THEN POSITION 12,13:? "Not enou
   gh memory":GOTO 5140
IR 5110 ENG$(LENG+1,LENG+1)=CHR$(LQW):RUS
   $(LRUS+1,LRUS+1)=CHR$(LAW)
LC 5120 ENG$(LENG+2)=QW$:RUS$(LRUS+2)=AW$

AD 5130 NP=NP+1
GJ 5140 POKE 764,255
AS 5150 POSITION 0,12:? KBAR$
YB 5160 VAR=PEEK(764):IF VAR=255 THEN 516
   0
GS 5170 POKE 764,255
IT 5180 IF VAR=33 THEN 5000
OG 5190 GOTO 2000
VC 6000 REM DELETE
WJ 6010 GOSUB 400
QQ 6015 IF WPOS+LW>=LEN(RUS$) THEN RUS$(W
   POS)="":GOTO 6030
QQ 6020 RUS$(WPOS)=RUS$(WPOS+LW+1)
WD 6030 GOSUB 300
CY 6035 IF WPOS+LW>=LEN(ENG$) THEN ENG$(W
   POS)="":GOTO 6050
ME 6040 ENG$(WPOS)=ENG$(WPOS+LW+1)
BE 6050 NP=NP-1
```

```
PO 6060 POSITION 0,12:? W$;" deleted
   ⊠";
OM 6070 GOTO 2010
IZ 7000 REM QUIZ
MP 7010 QD=INT(2*RND(0))+1
GY 7020 ON ORDER GOTO 7025,7030
BD 7025 PAIR=INT(NP*RND(0)):GOTO 7040
LT 7030 PAIR=PAIR+1:IF PAIR>NP-1 THEN PAI
   R=0
TI 7040 ON QD GOSUB 300,400
SM 7050 QW$=W$
TK 7060 ON QD GOSUB 400,300
PA 7070 AW$=W$
OK 7080 LQW=LEN(QW$):LAW=LEN(AW$)
KY 7100 ? "⊠"
TI 7110 ON QD GOSUB 200,230
MF 7300 ON QD GOTO 7310,7320
JV 7310 POSITION 9-INT(0.5*LEN(EBAR$)),1:
   ? EBAR$;:GOTO 7330
UI 7320 POSITION 9-INT(0.5*LEN(RBAR$)),1:
   ? RBAR$;
OD 7330 POKE 1709,164
SM 7340 POSITION 9-INT(0.5*LQW),3:? QW$;
VB 7350 ON QD GOTO 7360,7370
EM 7360 POSITION 29-INT(0.5*LEN(RBAR$)),5
   :? RBAR$;:GOTO 7380
NV 7370 POSITION 29-INT(0.5*LEN(EBAR$)),5
   :? EBAR$;
IE 7380 FOR IT=1 TO 20:POKE 1709,164+IT:N
   EXT IT
IR 7390 POSITION 0,7:INPUT ANS$
CG 7400 TIDS=TIDS+1
YW 7410 IF  NOT ANS$=AW$ THEN 7500
RJ 7420 CIDS=CIDS+1
TE 7430 ON QD GOTO 7440,7450
AZ 7440 POSITION 29-INT(0.5*LEN(PBAR$)),8
   :? PBAR$;:GOTO 7460
MN 7450 POSITION 29-INT(0.5*LEN(CBAR$)),8
   :? CBAR$;
TC 7460 GOTO 7600
PN 7500 ON QD GOTO 7510,7520
TP 7510 POSITION 29-INT(0.5*LEN(OBAR$)),8
   :? OBAR$;:GOTO 7530
GS 7520 POSITION 29-INT(0.5*LEN(ABAR$)),8
   :? ABAR$;
LN 7530 POKE 1723,208
DU 7540 POSITION 29-INT(0.5*LAW),10:? AW$
   ;
CI 7550 FOR IT=1 TO 20:POKE 1723,208+IT:N
   EXT IT
XA 7600 POKE 764,255:POSITION 0,12:? KBAR
   $;
OS 7605 POSITION 0,14:? BAR$;
AN 7610 VAR=PEEK(764):IF VAR=255 THEN 761
   0
MW 7630 IF VAR=33 THEN POKE 764,255:GOTO
   7000
NB 7640 POSITION 0,12:? BBAR$;:GOTO 2020
SA 8000 REM TALLY
SR 8010 POSITION 0,12:? BBAR$
UM 8020 POSITION 0,12:? CIDS;" correct ou
   t of ";TIDS;" - ";INT(CIDS/TIDS*100+0.
   5);"%";
OC 8030 GOTO 2010
IT 31000 REM END
PA 31010 POKE 106,PEEK(106)+4:GRAPHICS 0
QB 31020 POKE 752,0:POKE 756,224:POKE 82,
   2
OL 31050 ? "Your Name";:INPUT W$
MA 31060 CLOSE #1:TRAP 31080:CLOSE #1
GT 31070 OPEN #1,9,0,"D:QLOG":GOTO 31090
PO 31080 CLOSE #1:OPEN #1,8,0,"D:QLOG"
WK 31090 TRAP 40000
IV 31100 ? #1;W$;" ";CIDS;" ";TIDS;" ";IN
   T(CIDS/TIDS*100+0.5)
XR 31110 END
```

LISTING 2

```
EB 10 REM DATAFILE MAKER FOR QUIZZER, LIS
   TING 2
PC 20 REM BY ANDREW THOMAS
QH 30 REM (c)1988, ANTIC PUBLISHING
VB 40 DIM A$(1081)
XW 50 GRAPHICS 0:POKE 710,12:POKE 709,2
EQ 60 ? :? :? :? :? :? :? "▶ This progra
   m creates the":? "▶RUSENG.QUI datafile
    for the":POKE 752,1
JS 70 ? "▶QUIZZER program.":? :? "▶ Press
    any key to start"
PA 80 POKE 764,255
VV 90 IF PEEK(764)=255 THEN 90
HN 100 ? :? "▶(Working)":POKE 77,128:POKE
    764,255
QX 110 A$(1,12)="          80"
BK 120 A$(13,13)=CHR$(155)
GB 130 A$(14,16)="517"
EU 140 A$(17,17)=CHR$(155)
EL 150 A$(18,20)="543"
AV 160 A$(21,21)=CHR$(155)
HK 170 A$(22,112)="fBRIDGEfMARKETfNAPKINh
   TO STANDfFINGERcEGGcDRYdSNOWfTO SITeDE
   VILdROOMfCORNERfPOLICEıMALE TEA"
EA 180 A$(113,203)="CHERnFEMALE TEACHERdW
   ALLkELECTRICITYcEAReSLEEPkEXCESSIVELYd
   ALSOdBIRDfALMOSTdFOUReBLACKhTO S"
MH 190 A$(204,294)="HOOTcSIXgTO READfGARD
   ENeSHARPdBOOTgTO HELPcJOYeTHICKcBOXcNO
   WdCOLDcPENhTO LAUGHgSPECIALcROWc"
PO 200 A$(295,385)="CUPcOLDeOFTENhPLEASUR
   EdGOODdTHINdTHENgALREADYfLESSONhPOTATO
   ESdTREEeFIRSTdPOETePLATEhTO DANC"
DM 210 A$(386,476)="EfTO DIEdHALFeTHEREgH
   EALTHYeCHAIReCHEEKdSAMEfENERGYfSLOWLYf
   SQUAREgWEATHERdHEREgCEILINGeFORT"
RX 220 A$(477,567)="YdSALTgQUIETLYeFRUITd
   FEAReDEATHeRIVERfSCHOOLfCHEESEdPAGEeSE
   VENdMOSTeR:NOKhSALFETKAfSTOQT\eP"
SV 230 A$(568,658)="ALECdQICOdSYHOdSNEGfS
   IDET\dJORTgKOMNATAdYGOLgPOLICIQgYJITEL
   \kYJITEL\NICAeSTENAm^LEKTRIJESTV"
UJ 240 A$(659,749)="OcYHOcSONgSLIWKOMdTOX
   EePTICAePOJTIfJET:REfJ_RN:[hSTRELQT\eW
   EST\fJITAT\cSADfREZKI[eSAPOGhPOM"
FF 250 A$(750,840)="OGAT\gRADOST\gTOLST:[
   dQ>IKfTEPER\eHOLODdPEROhSMEQT\SQkSPECI
   AL\N:[cRQDeJAWKAfSTAR:[eJASTOıYD"
KS 260 A$(841,931)="OVOL\STVIEfHOROWOfTON
   KI[eTOGDAcYXEdYROKiKARTOFEL\fDEREVOfPE
   RV:[dPO^TgTARELKAiTANCOVAT\gYMIR"
GZ 270 A$(932,1022)="AT\hPOLOVINAcTAMhZDO
   ROV:[dSTYLd>EKAeRAVNOg^NERGIQhMEDLENNO
   gPLO>AD\fPOGODAdSUDAgPOTOLOKeSORO"
GD 280 A$(1023,1081)="KdSOL\dTIHOeFRYKTeS
   TRAHfSMERT\dREKAeWKOLAcS:RhSTRANICAdSE
   M\"
MS 290 M=0.0351851851:B=0.4648155
KF 300 FOR X=1 TO 1081:Y=INT(M*X+B):POSIT
   ION Y,20:? ".";
SG 310 C=ASC(A$(X,X)):IF C>96 AND C<123 T
   HEN A$(X,X)=CHR$(C-96)
LR 320 NEXT X
LI 330 CLOSE #1:OPEN #1,8,0,"D:RUSENG.QUI
   "
DU 340 ? #1;A$;:CLOSE #1
LL 350 POKE 752,0:POKE 77,0:? :POSITION 7
   ,14:? "Done!"
```

LISTING 3

```
DC 10 REM CYRILLIC FONT MAKER FOR QUIZZER
   , LISTING THREE
PC 20 REM BY ANDREW THOMAS
GD 30 REM (c) 1985,1988 ANTIC PUBLISHING
EV 40 REM (LINES 10-250 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IJ 50 REM CHANGE LINE 70 AS NECESSARY.)
PR 60 DIM FN$(20),TEMP$(20),AR$(93):DPL=P
   EEK(10592):POKE 10592,255
ZT 70 FN$="D:CYRILL.FNT":REM THIS IS THE
   NAME OF THE DISK FILE TO BE CREATED
RD 80 ? "⊠Disk or Cassette?";:POKE 764,25
   5
PY 90 IF  NOT (PEEK(764)=18 OR PEEK(764)=
   58) THEN 90
TH 100 IF PEEK(764)=18 THEN FN$="C:"
VB 110 POKE 764,255:GRAPHICS 0:? "      AN
   TIC'S GENERIC BASIC LOADER"
MY 120 ? ,"BY CHARLES JACKSON"
KB 130 POKE 10592,DPL:TRAP 200
PU 140 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
```

continued on next page

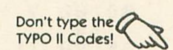
```
LW 150 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BQ 160 AR$="":READ AR$
YC 170 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DM 180 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")      "
BK 190 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 160
MM 200 IF PEEK(195)=5 THEN ? :? :? "◙TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CM 210 IF C<LN+1 THEN ? :? "◙TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
UQ 220 IF FN$="C:" THEN ? :? " Prepare ca
   ssette, press [RETURN]"
AR 230 OPEN #1,8,0,FN$
PV 240 POKE 766,1:? #1;A$;:POKE 766,0
AL 250 CLOSE #1:GRAPHICS 0:? " COMPLETED 
   "
GK 1000 DATA 1024
YR 1010 DATA 000000000000000000000000000000
   240240240240000024000000102102102000000
   000000000102255102102255102
NY 1020 DATA 000024062096060000612402400000
   001021080240481020700000000000024024000
   024024048000024024024000000
CA 1030 DATA 000000000014028024024028014000
   00001120560240240561120000000000124070
   030007012400000000000096096124
QD 1040 DATA 102124000000000990281031111231
   150001020000601021260960600000000000000
   000000024024000000000006012024
XK 1050 DATA 048096064000000006010211011810
   206000000000240560240240241260000000060
   102012024048126000000126012
DT 1060 DATA 024012102060000000000120280601
   081260120000001260961240061020600000000
   060096124102102060000000126
GM 1070 DATA 006012024048048000000000601020
   601021020600000000601020620060120560000
   000990991231111111123000000
UR 1080 DATA 000099099123111112300000000002
   192192192192550030000000126000000126000
   000000219219219219219255003
TA 1090 DATA 000060102012024000002400000000
   002402400000240240000000002406010210212
   6102000000126096124102102124
FJ 1100 DATA 000000102102102102102126007000
   0150270270270510630990001260961240960
   96126000002800080621071070620
TU 1110 DATA 008028000126098096096096096000
   001021020600601021020000000102110126126
   118102000000102102102126
OA 1120 DATA 006006000000102108120120108102
   000000062054054102102102000000000991191
   27107099099000000102102126
CD 1130 DATA 102102102000000060102102102102
   06000000001261021021021021020000000062
   102102062054102000000124102
EI 1140 DATA 102124096096000000006010209609
   6102060000000126090024024024060000000
   110123123123123110000000124
QE 1150 DATA 102124102102124000000021921921
   92192192550000001071070620621071070000
   00102102060024024024000000
CR 1160 DATA 060102012006102060000009902809
   91031111123115000000009609612410210212
   4000000000000000000000024024048
TK 1170 DATA 000124006062006006124000054126
   0961240960961260000000541271270620280
   08000002402402403103102402 4
GD 1180 DATA 024003003003003003003003003024
   02402424824800000000000024024024248248
   024024024000000000248248024
QO 1190 DATA 024024003007014028056112224192
   192224112056028014007003001003007015
   031063127255000000000000015
BP 1200 DATA 015015015128192224240248252254
   2550150150150150000000000000240240240
   240000000000000255255000000
ET 1210 DATA 000000000000000000000000000000
   2552550000000000002402402402400000280
   28119119008028000000000000
PP 1220 DATA 031031024024024000000000002552
   5500000000002402402425525502402402400
   0000601261261260600000000000
VI 1230 DATA 000000255255255255192192192192
   192192192192000000000002552550240240240
   24024024255255000000000240
ID 1240 DATA 240240240240240240240024024024
   0310310000000001200961200961260240300
   00000024060126024024024000
BC 1250 DATA 000024024024126060024000000024
   048126048024000000000002401212601202400
   00000000240601261260600 24
AN 1260 DATA 000000000060006062102062000000
   006060096124102060000000000001021021021
   02126007000000015027027051
LY 1270 DATA 063099000000006010212609606000
   00000240080621070620080280000000126098
   096096096000000000102060024
YV 1280 DATA 060102000000000102110126118102
   0000000000102102126006006000000000102
   108120108102000000000030054
RT 1290 DATA 054102102000000000009911912710
   7099000000000102102126102102000000000
   060102102102060000000000126
LG 1300 DATA 102102102102000000000006210210
   2062102000000000124102102124096000000
   000060096096096060000000000
ZG 1310 DATA 126090024024060000000000001101
   231231231100000000001241021241021240000
   00000219219219219255000000
UI 1320 DATA 000107062028062107000000000001
   0210210206201212000000000601020121020600
   00000024060126126024060000
XZ 1330 DATA 024024024024024024024024000126
   1201241101020060000008024056120056024
   008000001602402803002802401 6
DR 1340 DATA 000
```

full 80-column graphics display for 8-bit

FIRST XEP80 SLIDE SHOW

Article on page 36

LISTING 1




```
SQ 4 REM XEP80 DEMO, LISTING 1
TT 5 REM BY MATTHEW RATCLIFF
OS 6 REM (c)1988, ANTIC PUBLISHING INC.
PD 10 GRAPHICS 24:SZ=40
LN 20 DIM GRAF$(SZ)
QX 30 FOR I=255 TO 1 STEP -1
KK 40 GRAF$(1)=CHR$(I):REM FAST STRING FI
   LL TECHNIQUE
RR 50 GRAF$(SZ)=CHR$(I):REM FOR 'GRAPHIC
   DISPLAY BYTES'
FL 60 GRAF$(2)=GRAF$
VK 70 ? GRAF$;:REM PRINT SZ BYTES AS FAST
    AS POSSIBLE
IW 80 NEXT I
BA 90 OPEN #7,4,0,"E:":CLOSE #7:REM GET X
   EP80 BACK TO TEXT MODE
```

LISTING 2

```
RD 5 REM XEP80 GRAPHICS VIEWER PROGRAM (L
   ISTING 2)
IF 10 REM BY MATTHEW RATCLIFF
QG 20 REM (c)1988, ANTIC PUBLISHING
CP 30 GOSUB 25000:REM XEPGRAF$ USR
DS 40 GOSUB 30000:REM XEPFREAD$ USR
YT 50 DIM A$(80),DIR$(80),SCR$(7680),DRV$
   (3),FIL$(16),EXT$(4):DIR$="D1:*.*"
GC 60 OPEN #7,4,0,"E:":CLOSE #7:REM PUT X
   EP IN TEXT MODE, CLEAR SCREEN
DD 70 ? "Directory file spec (RETURN for
   ";DIR$;") ";:INPUT A$:IF LEN(A$)<>0 TH
   EN DIR$=A$
OM 80 TRAP 90:GOTO 100
CO 90 CLOSE #1:? "* FILE ERROR *":GOTO 70
DY 100 OPEN #1,6,0,DIR$
KZ 110 TRAP 130
LI 120 INPUT #1,A$:? A$:GOTO 120
LD 130 CLOSE #1
HM 140 DRV$="D1:"
YY 150 IF (DIR$(2,2)<>":") AND (DIR$(2,2)
   <>"1") THEN DRV$(2,2)=DIR$(2,2)
CJ 160 EXT$=""
QX 170 FOR I=1 TO LEN(DIR$)
AC 180 IF DIR$(I,I)="." THEN EXT$=DIR$(I)
   :GOTO 200
GJ 190 NEXT I
SP 200 ? :? "Graphics file to view ";:INP
   UT FIL$:IF LEN(FIL$)=0 THEN 70
MY 210 FOR I=1 TO LEN(FIL$)
ZJ 220 IF FIL$(I,I)="." THEN 250
FY 230 NEXT I
RX 240 FIL$(LEN(FIL$)+1)=EXT$
SV 250 IF (FIL$(2,2)=":") OR (FIL$(3,3)="
   :") THEN 270
HE 260 A$=FIL$:FIL$=DRV$:FIL$(4)=A$
HL 270 TRAP 280:GOTO 290
YP 280 OPEN #1,4,0,FIL$:CLOSE #1
WH 290 ? "Loading picture file ";FIL$
OC 300 A=USR(ADR(XEPFREAD$),ADR(FIL$),ADR
   (SCR$))
XM 310 GRAPHICS 24
XI 320 A=USR(ADR(XEPGRAF$),ADR(SCR$))
CG 325 FOR I=15 TO 0 STEP -0.2:SOUND 0,60
   ,10,I:NEXT I
CY 330 IF PEEK(764)=255 THEN 330
ZB 340 POKE 764,255:GOTO 60
UU 25000 RESTORE 25030:DIM XEPGRAF$(43):I
   =1
OL 25010 READ A:IF A<0 THEN RETURN
QL 25020 XEPGRAF$(I,I)=CHR$(A):I=I+1:GOTO
    25010
RX 25030 DATA 104,201,1,240,9,170,240,5
IQ 25040 DATA 104,104,202,208,251,96,162,
   0
RM 25050 DATA 104,157,69,3,104,157,68,3
TI 25060 DATA 169,11,157,66,3,169,0,157
NY 25070 DATA 72,3,169,30,157,73,3,76
AC 25080 DATA 86,228,96,-1
HI 30000 RESTORE 30030:DIM XEPFREAD$(101)
   :I=1
OC 30010 READ A:IF A<0 THEN RETURN
JP 30020 XEPFREAD$(I,I)=CHR$(A):I=I+1:GOT
   O 30010
SI 30030 DATA 104,201,2,240,9,170,240,5
HF 30040 DATA 104,104,202,208,251,96,104,
   133
VC 30050 DATA 209,104,133,208,104,133,211
   ,104
XT 30060 DATA 133,210,162,112,169,3,157,6
   6
WJ 30070 DATA 3,169,4,157,74,3,169,0
YC 30080 DATA 157,75,3,165,208,157,68,3
VB 30090 DATA 165,209,157,69,3,32,86,228
FF 30100 DATA 152,48,41,162,112,169,7,157
RD 30110 DATA 66,3,165,210,157,68,3,165
ST 30120 DATA 211,157,69,3,169,0,157,72
KL 30130 DATA 3,169,30,157,73,3,32,86
AE 30140 DATA 228,152,162,112,169,12,157,
   66
KH 30150 DATA 3,32,86,228,96,-1
```

LISTING 3

```
AK 10 REM DUAL SCREEN DISPLAY SIMPLE DEMO
    (LISTING 3)
IG 20 REM BY MATTHEW RATCLIFF
QH 30 REM (c)1988, ANTIC PUBLISHING
GO 35 SCR40=PEEK(88)+256*PEEK(89):RANDOM=
   53770
VM 40 ? CHR$(125);"You are now viewing th
   e 80 column XEP display."
WL 50 ? :? "Get ready to view the 40 colu
   mn screen and press RETURN ?";
SS 60 IF PEEK(764)=255 THEN 60
OZ 70 POKE 764,255
GB 80 XIO 25,#6,12,0,"E:"
OE 90 FOR I=SCR40 TO SCR40+959
NG 100 POKE I,PEEK(RANDOM):REM RANDOM SCR
   EEN FILL
FT 110 NEXT I
BP 120 FOR I=15 TO 0 STEP -0.2:SOUND 0,60
   ,10,I:NEXT I
BD 130 XIO 24,#6,44,0,"E:"
QO 140 GOTO 40
```

LISTING 4

```
KT 10 REM DUAL DISPLAY DEMP, LIST DIRECTO
   RY ON 40 COLUMN DISPLAY (LISTING 4)
IG 20 REM BY MATTHEW RATCLIFF
QH 30 REM (c)1988, ANTIC PUBLISHING
OE 40 GOSUB 20000:REM INIT XEPRINT USR RO
   UTINE
EG 50 DIM F$(30),A$(960):REM HOLDS A WHOL
   E SCREEN OF DATA
JW 60 ? "}Directory spec to see ";:INPUT
   A$
ZV 70 XIO 25,#6,12,0,"E:":REM 40 COLUMNS
   ON
NL 80 TRAP 180
HX 90 OPEN #1,6,0,A$:A$=CHR$(125):A$(2,2)
   =" ":REM CLEAR SCREEN FIRST
PB 100 Y=0:REM COUNT LINES READ
VD 110 INPUT #1,F$
UD 120 A$(LEN(A$)+1)=F$:IF (INT(Y)<>Y) TH
   EN A$(LEN(A$)+1)=CHR$(155):REM FILE/RE
   TURN
XO 125 A$(LEN(A$)+1)=" "
QA 126 IF (Y/2)<>Y/2 THEN A$(LEN(A$)+1)=C
   HR$(155):GOTO 130
LK 130 Y=Y+0.5
NB 140 IF Y<23 THEN 110
II 150 A=USR(ADR(XEPRINT$),3,1,ADR(A$),LE
   N(A$)):REM PUT ON 40 COL DISPLAY
HP 160 A=USR(ADR(XEPRINT$),20,23,ADR("<PR
   ESS RETURN>"),14)
FM 161 IF PEEK(764)=255 THEN 161
WZ 162 POKE 764,255
MF 170 GOTO 110
LN 180 CLOSE #1
IQ 190 A=USR(ADR(XEPRINT$),3,1,ADR(A$),LE
   N(A$)):REM PUT ON 40 COL DISPLAY
IK 195 A=USR(ADR(XEPRINT$),20,23,ADR("<PR
   ESS RETURN>"),14)
PC 196 IF PEEK(764)=255 THEN 196
YC 200 XIO 24,#6,44,0,"E:":POKE 764,255
LK 210 ? "}PRESS RETURN TO CONTINUE OR ST
   ART TO VIEW 40 COL DISPLAY."
MV 220 IF PEEK(764)<>255 THEN POKE 764,25
   5:GOTO 60
RW 230 IF PEEK(53279)<>7 THEN XIO 25,#6,1
   2,0,"E:":GOTO 250
MV 240 GOTO 220
YO 250 IF PEEK(53279)<>7 THEN 250
EU 260 XIO 24,#6,44,0,"E:":REM 80 COL ON
NB 270 GOTO 220
CO 20000 RESTORE 20030:DIM XEPRINT$(208):
   I=1
OB 20010 READ A:IF A<0 THEN RETURN
VP 20020 XEPRINT$(I,I)=CHR$(A):I=I+1:GOTO
    20010
ZZ 20030 DATA 104,201,4,240,9,170,240,5,1
   04,104,202,208,251,96,169,0,133,214,13
   3,215,104,104,133,212
JV 20060 DATA 104,104,133,213,170,240,14,
   169,40,24,101,214,133,214,144,2,230,21
   5,202,208,242,165,212,24
UL 20090 DATA 101,214,133,214,144,2,230,2
   15,24,165,88,101,214,133,214,133,216,1
   65,89,101,215,133,215,133
PJ 20120 DATA 217,104,133,209,104,133,208
   ,104,133,211,104,133,210,160,0,56,165,
   210,233,1,133,210,176,6
DZ 20150 DATA 165,211,240,52,198,211,177,
```

continued on next page

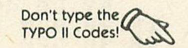
```
   208,201,155,240,78,201,125,240,41,133,
   220,41,127,170,224,96,176
XJ 20180 DATA 13,169,64,224,32,144,2,169,
   224,24,101,220,133,220,165,220,145,214
   ,230,214,208,2,230,215
CV 20210 DATA 230,208,208,193,230,209,208
   ,189,96,165,88,133,218,165,89,133,219,
   162,3,169,0,145,218,200
ED 20240 DATA 208,251,230,219,202,208,246
   ,145,218,200,192,192,208,249,160,0,240
   ,214,24,169,40,101,216,133
AS 20270 DATA 216,144,2,230,217,165,216,1
   33,214,165,217,133,215,24,144,192,-1
```

power tool for stained-glass designers

POLYHEDRON DESIGNER

Article on page 28

LISTING 1




```
GO 10 REM POLYHEDRON DESIGNER
OO 12 REM BY IRVINE W. SMITH
QN 14 REM (c)1988, ANTIC PUBLISHING
DU 20 DIM A(7,25),P1(25),P2(25),P3(25),P4
   (25),G$(25),R$(20),S$(25)
PZ 30 DEG :DIM A$(11),B$(10),C$(10),D$(14
   ),E$(10),N$(14),Q$(10),T$(14),AR$(10),
   BL$(40),PR$(10):SV=1.1:? "■"
SI 40 ? "This program allows design of a
   three-level polyhedron.  A top view a
   nd a"
IR 50 ? "side view are accurately scaled
   on thescreen. A scale drawing may be p
   lottedon a 1020 Atari Plotter."
QD 60 ? :? "  To make a new design, four
   radii    must be entered (top, mid and
    bottom) and 3 vertical heights."
AV 70 ? "  Up to 24 polygon sides, with p
   anels of triangular or 4-sided shape,
   may beused.":?
XC 80 ? "PRESS 1 FOR MENU 1, or any other
    key   for a sample drawing-then press
    RETURN"
FL 85 TRAP 90:INPUT A:IF A=1 THEN 1270
FP 90 TRAP 40000
PR 100 A=10:B=9:C=2:D=5:E=4:F=8:G=2:N=12:
   I1=3:I2=4:I3=3:G$="LAMPSHADE"
RV 110 ? "Note that this lampshade has th
   ree-   sided panels top and bottom and
    four- sided panels at mid level."
DE 120 POKE 752,5:? :? "NOW COMPUTING -PL
   EASE WAIT":Q=180/N:Z=COS(Q):SOUND 0,24
   3,10,4
CV 130 IF A>=B AND A>=C AND A>D THEN W=A:
   GOTO 170
QY 140 IF B>=C AND B>=D THEN W=B:GOTO 170
SG 150 IF C>=A AND C>=D THEN W=C:GOTO 170
NQ 160 W=D
IW 170 IF 2*W/Z>SV*(E+F+G) THEN 190
XK 180 S=160/SV/(E+F+G):M=1:GOTO 200
JF 190 S=70/W*Z:M=1
FN 195 S=S*1:REM CHANGE TO ADJUST SCALE
EF 200 U1=W:PQ=M:FOR L=0 TO N:IF L=N THEN
    M=PQ
MM 210 P1(L)=M*Q:A(0,L)=A*S*COS(P1(L))/Z:
   A(1,L)=A*S*SIN(P1(L))/SV/Z
RA 220 M=M+2:NEXT L:SOUND 1,193,10,4
PN 230 IF I1=3 THEN M=0:GOTO 250
GM 240 M=1
FZ 250 PQ=M:FOR L=0 TO N:IF L=N THEN M=PQ
XM 260 P2(L)=M*Q:A(2,L)=B*S*COS(P2(L))/Z:
   A(3,L)=B*S*SIN(P2(L))/SV/Z
OD 270 M=M+2:NEXT L:SOUND 2,162,10,4
JE 280 IF I1=I2 THEN M=1:GOTO 300
GP 290 M=0
FQ 300 PQ=M:FOR L=0 TO N:IF L=N THEN M=PQ
HT 310 P3(L)=M*Q:A(4,L)=C*S*COS(P3(L))/Z:
   A(5,L)=C*S*SIN(P3(L))/SV/Z
JM 320 M=M+2:NEXT L:SOUND 3,121,10,4
ZC 330 IF I3=4 THEN M=PQ:GOTO 350
LI 340 M=PQ+1:IF M=2 THEN M=0
GA 350 PQ=M:FOR L=0 TO N:IF L=N THEN M=PQ
ST 360 P4(L)=M*Q:A(6,L)=D*S*COS(P4(L))/Z:
   A(7,L)=D*S*SIN(P4(L))/SV/Z
WP 370 M=M+2:NEXT L:SOUND 3,0,0,0:SOUND 2
   ,0,0,0:SOUND 1,0,0,0:SOUND 0,0,0,0
KC 380 GRAPHICS 24:POKE 710,12:POKE 712,1
   2:POKE 709,2:COLOR 1:PLOT 0,80:DRAWTO
   160,80
PO 385 PLOT 84,0:DRAWTO 84,145:PLOT 83,0:
   DRAWTO 83,145
OP 390 PLOT 84+A(0,N),80+A(1,N)
KQ 400 FOR L=0 TO N:DRAWTO 84+A(0,L),80+A
   (1,L):NEXT L
YM 410 PLOT 83+A(0,N),80+A(1,N):FOR L=0 T
   O N:DRAWTO 83+A(0,L),80+A(1,L):NEXT L
UW 420 PLOT 84+A(2,N-1),80+A(3,N-1):FOR L
   =0 TO N:DRAWTO 84+A(2,L),80+A(3,L):NEX
   T L
SK 430 PLOT 83+A(2,N-1),80+A(3,N-1):FOR L
   =0 TO N:DRAWTO 83+A(2,L),80+A(3,L):NEX
   T L
IC 440 PLOT 84+A(4,N-1),80+A(5,N-1):FOR L
   =0 TO N:DRAWTO 84+A(4,L),80+A(5,L):NEX
   T L
FQ 450 PLOT 83+A(4,N-1),80+A(5,N-1):FOR L
   =0 TO N:DRAWTO 83+A(4,L),80+A(5,L):NEX
   T L
VI 460 PLOT 84+A(6,N-1),80+A(7,N-1):FOR L
   =0 TO N:DRAWTO 84+A(6,L),80+A(7,L):NEX
   T L
SW 470 PLOT 83+A(6,N-1),80+A(7,N-1):FOR L
   =0 TO N:DRAWTO 83+A(6,L),80+A(7,L):NEX
   T L
NZ 480 FOR QQ=0 TO 50:IF (84+QQ*S)>240 TH
   EN 520
KU 490 PLOT 84+QQ*S,158:IF QQ/5-INT(QQ/5)
   =0 THEN 510
AT 500 DRAWTO 84+QQ*S,153:NEXT QQ:GOTO 52
   0
SS 510 DRAWTO 84+QQ*S,153:PLOT 83+QQ*S,15
   8:DRAWTO 83+QQ*S,153:NEXT QQ
GE 520 PLOT 240,155:DRAWTO 240,0:A$="0":X
   =10:Y=145:GOSUB 570
SL 525 IF S>31 THEN 560
FH 530 A$="5":X=10+S*5/8:Y=145:GOSUB 570
CV 540 IF S>15.5 THEN 560
HY 550 A$="10":X=10+S*10/8:Y=145:GOSUB 57
   0
PX 560 GOTO 650
RN 570 SC=PEEK(88)+PEEK(89)*256:CH=SC+Y*4
   0+X
NB 580 FOR Z=1 TO LEN(A$):S$=A$(Z,Z):GOSU
   B 610
HW 590 CT=57344+X*8:FOR I=0 TO 7:POKE CH+
   I*40,PEEK(CT+I):NEXT I
HT 600 CH=CH+1:NEXT Z:RETURN
ES 610 X=ASC(S$):IF X>127 THEN X=X-128
SJ 620 IF X>31 AND X<96 THEN X=X-32:GOTO
```

```
   640
XU 630 IF X<32 THEN X=X+64
ZK 640 RETURN
ME 650 S1=E*S/SV:S2=(E+F)*S/SV:S3=(E+F+G)
   *S/SV
NM 660 IF I1=4 THEN 710
AU 670 FOR L=0 TO N-1:PLOT 84+A(0,L),80+A
   (1,L):DRAWTO 84+A(2,L+1),80+A(3,L+1):N
   EXT L
XV 680 FOR L=0 TO N-1:PLOT 83+A(0,L),80+A
   (1,L):DRAWTO 83+A(2,L+1),80+A(3,L+1):N
   EXT L
GM 690 FOR L=0 TO N-1:PLOT 240+A(0,L),150
   :DRAWTO 240+A(2,L+1),150-S1:NEXT L
DH 700 FOR L=0 TO N-1:PLOT 239+A(0,L),150
   :DRAWTO 239+A(2,L+1),150-S1:NEXT L
HN 710 FOR L=0 TO N-1:PLOT 84+A(0,L),80+A
   (1,L):DRAWTO 84+A(2,L),80+A(3,L):NEXT
   L
EO 720 FOR L=0 TO N-1:PLOT 83+A(0,L),80+A
   (1,L):DRAWTO 83+A(2,L),80+A(3,L):NEXT
   L
XA 730 FOR L=0 TO N-1:PLOT 240+A(0,L),150
   :DRAWTO 240+A(2,L),150-S1:NEXT L
UO 740 FOR L=0 TO N-1:PLOT 239+A(0,L),150
   :DRAWTO 239+A(2,L),150-S1:NEXT L
GI 750 FOR L=0 TO N/2:PLOT 240+A(0,L),150
   :DRAWTO 240+A(0,L+1),150:NEXT L
VH 760 FOR L=0 TO N/2:PLOT 240+A(2,L),150
   -S1:DRAWTO 240+A(2,L+1),150-S1:NEXT L
UM 770 IF I2=4 THEN 890
PC 780 IF I1=I2 THEN 820
QB 790 FOR L=0 TO N-1:PLOT 84+A(2,L),80+A
   (3,L):DRAWTO 84+A(4,L+1),80+A(5,L+1):N
   EXT L
MJ 800 FOR L=0 TO N-1:PLOT 83+A(2,L),80+A
   (3,L):DRAWTO 83+A(4,L+1),80+A(5,L+1):N
   EXT L
RG 810 GOTO 870
LG 820 FOR L=0 TO N-1:PLOT 84+A(4,L),80+A
   (5,L):DRAWTO 84+A(2,L+1),80+A(3,L+1):N
   EXT L
IH 830 FOR L=0 TO N-1:PLOT 83+A(4,L),80+A
   (5,L):DRAWTO 83+A(2,L+1),80+A(3,L+1):N
   EXT L
XD 840 FOR L=0 TO N-1:PLOT 240+A(4,L),150
   -S2:DRAWTO 240+A(2,L+1),150-S1:NEXT L
VP 850 FOR L=0 TO N-1:PLOT 239+A(4,L),150
   -S2:DRAWTO 239+A(2,L+1),150-S1:NEXT L
SM 860 GOTO 890
AI 870 FOR L=0 TO N-1:PLOT 240+A(2,L),150
   -S1:DRAWTO 240+A(4,L+1),150-S2:NEXT L
YU 880 FOR L=0 TO N-1:PLOT 239+A(2,L),150
   -S1:DRAWTO 239+A(4,L+1),150-S2:NEXT L
XC 890 FOR L=0 TO N-1:PLOT 84+A(2,L),80+A
   (3,L):DRAWTO 84+A(4,L),80+A(5,L):NEXT
   L
XY 900 FOR L=0 TO N-1:PLOT 83+A(2,L),79+A
   (3,L):DRAWTO 83+A(4,L),79+A(5,L):NEXT
   L
HT 910 FOR L=0 TO N:PLOT 240+A(2,L),150-S
   1:DRAWTO 240+A(4,L),150-S2:NEXT L
EZ 920 FOR L=0 TO N:PLOT 239+A(2,L),150-S
   1:DRAWTO 239+A(4,L),150-S2:NEXT L
GA 930 FOR L=0 TO N/2:PLOT 240+A(4,L),150
   -S2:DRAWTO 240+A(4,L+1),150-S2:NEXT L
ZW 940 IF I3=4 THEN 1050
XS 950 IF I1=I2 THEN 1010
AR 960 FOR L=0 TO N-1:PLOT 84+A(6,L),80+A
   (7,L):DRAWTO 84+A(4,L+1),80+A(5,L+1):N
   EXT L
XS 970 FOR L=0 TO N-1:PLOT 83+A(6,L),80+A
   (7,L):DRAWTO 83+A(4,L+1),80+A(5,L+1):N
   EXT L
IJ 980 FOR L=0 TO N-1:PLOT 240+A(6,L),150
   -S3:DRAWTO 240+A(4,L+1),150-S2:NEXT L
GV 990 FOR L=0 TO N-1:PLOT 239+A(6,L),150
   -S3:DRAWTO 239+A(4,L+1),150-S2:NEXT L
PO 1000 GOTO 1060
BU 1010 FOR L=0 TO N-1:PLOT 84+A(4,L),80+
   A(5,L):DRAWTO 84+A(6,L+1),80+A(7,L+1):
   NEXT L
YU 1020 FOR L=0 TO N-1:PLOT 83+A(4,L),80+
   A(5,L):DRAWTO 83+A(6,L+1),80+A(7,L+1):
   NEXT L
XG 1030 FOR L=0 TO N-1:PLOT 240+A(4,L),15
   0-S2:DRAWTO 240+A(6,L+1),150-S3:NEXT L
WJ 1040 FOR L=0 TO N-1:PLOT 239+A(4,L),15
   0-S2:DRAWTO 239+A(6,L+1),150-S3:NEXT L
CA 1050 FOR L=0 TO N-1:PLOT 84+A(4,L),80+
   A(5,L):DRAWTO 84+A(6,L),80+A(7,L):NEXT
   L
ZA 1060 FOR L=0 TO N-1:PLOT 83+A(4,L),80+
   A(5,L):DRAWTO 83+A(6,L),80+A(7,L):NEXT
   L
XW 1070 FOR L=0 TO N:PLOT 240+A(4,L),150-
   S2:DRAWTO 240+A(6,L),150-S3:NEXT L
VT 1080 FOR L=0 TO N:PLOT 239+A(4,L),150-
   S2:DRAWTO 239+A(6,L),150-S3:NEXT L
ED 1090 FOR L=0 TO N/2:PLOT 240+A(6,L),15
   0-S3:DRAWTO 240+A(6,L+1),150-S3:NEXT L
IZ 1100 A$="THIS ":X=42:Y=159:GOSUB 570:X
   =47:A$=G$:GOSUB 570:X=47+LEN(A$):A$="
   HAS ":A$(6)=STR$(N)
OZ 1101 H=LEN(A$)+X:GOSUB 570:A$=" SIDES"
   :X=H:GOSUB 570
VW 1102 X=41:Y=168:A$="RADII:":GOSUB 570:
   X=47:A$=STR$(D):A$(LEN(A$)+1)=",":H=X+
   LEN(A$):GOSUB 570
VJ 1103 X=H:A$=STR$(C):A$(LEN(A$)+1)=",":
   H=X+LEN(A$):GOSUB 570
FB 1108 X=H:A$=STR$(B):H=X+LEN(A$):GOSUB
   570
JL 1109 X=41:Y=176:A$="HEIGHTS:":GOSUB 57
   0:X=49:A$=STR$(G):A$(LEN(A$)+1)=",":H=
   X+LEN(A$):GOSUB 570
XC 1110 X=H:A$=STR$(F):A$(LEN(A$)+1)=",":
   H=X+LEN(A$):GOSUB 570
GE 1111 X=H:A$=STR$(E):H=X+LEN(A$):GOSUB
   570
IP 1120 X=1:Y=0:A$="[S]ave Scre":GOSUB 57
   0:X=12:A$="en [illegible] ANY KE":GOSUB 570:X=23
   :A$="Y to contin":GOSUB 570
OI 1122 X=34:A$="ue":GOSUB 570
GC 1130 POKE 764,255
QT 1140 P764=PEEK(764):IF P764<>255 THEN
   POKE 764,255:GOTO 1155
PR 1150 GOTO 1140
QI 1155 IF P764=62 THEN GOSUB 2270
CG 1160 GRAPHICS 0:POKE 752,5:POKE 709,20
   6:POKE 710,192:? :? "   MENU 2   for SHA
   PES.BAS":?
YD 1170 ? "1. GOTO MENU 1 (Create new des
   ign).":? :? "2. PRINT DESIGN DATA (Rat
   e the design)"
PX 1190 ? "3. PLOT THE DESIGN ON A 1020 P
   LOTTER.":?
GX 1200 ? "Press One Of These Numbers (an
   d     RETURN), to continue.":POKE 75
   2,0
WY 1220 TRAP 1250:INPUT H
QF 1230 TRAP 40000:IF H<1 OR H>3 THEN 125
   0
RC 1240 GOTO 1260
AN 1250 TRAP 40000:? "PLEASE ENTER ONLY 1
   , 2, OR 3":GOTO 1200
VR 1260 ON H GOTO 1270,1620,1800
JF 1270 GRAPHICS 0:POKE 709,110:POKE 710,
   96:? :? "    MENU 1  for SHAPES.BAS":?
   :?
OT 1280 ? "1. CREATE NEW DESIGN":? :? "2.
    LAMPSHADE":? :? "3. SWAGLAMP":? :? "4
   . PLANTER":? :? "5. BOWL":?
IF 1290 ? "6. JEWEL BOX":? :? "7. DIAMOND
   ":? :? "8. GEODOME":? :?
DH 1300 POKE 752,5:? "PRESS A MENU NUMBER
    (and RETURN)"
TO 1310 TRAP 1340:INPUT J:IF J>8 THEN 130
   0
MM 1320 ON J GOTO 1410,1340,1350,1360,137
   0,1380,1390,1400,1300
IG 1330 TRAP 40000:GOTO 1300
EG 1340 A=12:B=10:C=6:D=2:E=3:F=7:G=2:N=1
   2:I1=4:I2=3:I3=3:G$="LAMPSHADE":GOTO 1
   20
FF 1350 A=5:B=15:C=10:D=1:E=3:F=15:G=4:N=
   10:I1=3:I2=3:I3=3:G$="SWAGLAMP":GOTO 1
   20
DS 1360 A=4:B=8:C=10:D=0:E=4:F=12:G=6:N=8
   :I1=4:I2=3:I3=4:G$="PLANTER":GOTO 120
AC 1370 A=5:B=8:C=10:D=12:E=2:F=8:G=2:N=1
   6:I1=3:I2=4:I3=3:G$="BOWL":GOTO 120
XI 1380 A=10:B=12:C=8:D=0:E=2:F=6:G=2:N=1
   4:I1=3:I2=3:I3=4:G$="JEWEL BOX":GOTO 1
   20
FV 1390 A=0:B=12:C=8:D=4:E=6:F=3:G=1.5:N=
   18:I1=4:I2=3:I3=3:G$="DIAMOND":GOTO 12
   0
WK 1400 A=9.24:B=7.07:C=3.83:D=0:E=3.24:F
   =2.17:G=0.76:N=10:I1=3:I2=3:I3=4:G$="G
   EODOME":GOTO 120
JG 1410 GRAPHICS 0:? "K":? "If a wrong va
   lue is,entered before    pressing RETU
   RN, backspace and rewrite"
```

continued on next page

```
UF 1420 ? "After RETURN a wrong value can
   not be  corrected.   Continue to enter
   values"
XL 1430 ? "until START AGAIN? appears and
   then   reenter all values.":?
LN 1440 J1=1:TRAP 1360:? "ENTER TOP RADIU
   S";:INPUT D
HN 1450 J1=2:? "ENTER TOP HEIGHT";:INPUT
   G
WH 1460 J1=3:? "ENTER UPPER MID RADIUS";:
   INPUT C
MO 1470 J1=4:? "ENTER MID HEIGHT";:INPUT
   F
TR 1480 J1=5:? "ENTER LOWER MID RADIUS";:
   INPUT B
TP 1490 J1=6:? "ENTER BOTTOM HEIGHT";:INP
   UT E
QF 1500 J1=7:? "ENTER BOTTOM RADIUS";:INP
   UT A
JP 1510 J1=8:? "Want to START AGAIN? (Y o
   r N)";:INPUT A$:IF A$="Y" THEN 1440
MA 1520 IF  NOT A$="N" THEN 1510
WQ 1530 J1=9:? "ENTER No. SIDES (4 to 24
   max)";:INPUT N:IF N<4 OR N>24 THEN 153
   0
LQ 1540 J1=10:? "ENTER No. PANEL SIDES (3
   or 4) BOTTOM";:INPUT I1:IF I1<3 OR I1
   >4 THEN 1540
VD 1550 J1=11:? "ENTER No. PANEL SIDES (3
   or 4) MID";:INPUT I2:IF I2<3 OR I2>4
   THEN 11550
TM 1560 J1=12:? "ENTER No. PANEL SIDES (3
   or 4) TOP";:INPUT I3:IF I3<3 OR I3>4
   THEN 1560
AD 1570 J1=13:? "ENTER A NAME FOR IT (ex.
   PLANTER)";:INPUT G$
UI 1580 J1=14:? "Want to redo those last
   ones? (Y or N)";:INPUT A$:IF A$="Y" TH
   EN 1530
NZ 1590 IF  NOT A$="N" THEN 1340
NC 1600 TRAP 40000:GOTO 120
IP 1610 ? "WRONG ENTRY!";:ON J1 GOTO 1440
   ,1450,1460,1470,1480,1490,1500,1510,15
   30,1540,1550,1560,1570,1580
SM 1620 ? "K":TRAP 1630:? "HOW DO YOU RAT
   E IT? (GOOD, BAD, ETC)":INPUT R$:GOTO
   1640
PT 1630 TRAP 40000:? "USE LETTERS ONLY":G
   OTO 1620
GO 1640 ? "IF THE PRINTER IS TURNED ON, P
   RESS ANYKEY TO CONTINUE"
GS 1650 POKE 764,255
AH 1660 IF PEEK(764)<>255 THEN 1680
TP 1670 GOTO 1660
KX 1680 POKE 764,255:LPRINT "THIS ";N;"-S
   IDED ";G$;" DESIGN IS RATED ";R$
IK 1690 LPRINT "TOP RADIUS= ";D;"      TO
   P HEIGHT= ";G
FH 1700 LPRINT "UPPER RADIUS= ";C;"    MI
   D HEIGHT= ";F
MM 1710 LPRINT "LOWER RADIUS= ";B;"    BO
   TTOM HEIGHT= ";E
IL 1720 LPRINT "BOTTOM RADIUS= ";A
FP 1730 LPRINT "No. PANEL EDGES: TOP ";I3
   ;"  MID ";I2;"  BOTTOM ";I1
KY 1740 LPRINT "-------------------------
   ----":LPRINT
RD 1750 GOTO 1160
QA 1800 ? "K":? "A 1020 PLOTTER IS REQUIR
   ED FOR THIS.  TURN OFF PRINTER - TURN
   ON PLOTTER! ":CLOSE #2
LH 1810 ? "Press Y to proceed, N to go to
    MENU 2":TRAP 1820:INPUT A$:GOTO 1830
WK 1820 TRAP 40000:? "TYPE EITHER Y OR N"
   :GOTO 1810
NM 1830 IF A$="Y" THEN 1860
PP 1840 IF  NOT A$="N" THEN 1810
RF 1850 GOTO 1160
WH 1860 ? :? "ENTER PEN COLOR (0=black, 1
   =blue,     2=green, 3=red":TRAP 1870:I
   NPUT H:IF H>4 THEN 1860
WI 1865 GOTO 1880
UY 1870 TRAP 40000:? "ENTER 0, 1, 2, OR 3
    ONLY":GOTO 1860
GU 1880 OPEN #2,8,0,"P:":? #2;"ESN":? #2;"
   C";H:U2=235*COS(Q)*3.78/U1/480:U3=INT(
   1/U2*1000)/1000
EN 1890 ? :? "Full-width plotter scale is
   : ";U3:? "PRESS Y TO USE IT, N TO CHAN
   GE IT":TRAP 1930
EH 1900 INPUT A$:IF A$="Y" THEN 1970
XY 1910 IF  NOT A$="N" THEN 1890
TQ 1920 GOTO 1940
VL 1930 TRAP 40000:GOTO 1890
EF 1940 ? :? "ENTER DESIRED PLOTTER SCALE
    (not less)":TRAP 1960:INPUT U3:U2=1/U
   3
VM 1950 GOTO 1970
SB 1960 TRAP 40000:GOTO 1940
CA 1970 U=U2*480/3.78/5:S4=400-U2*127*(E+
   F+G):S5=400-U2*127*(G+F):S6=400-U2*127
   *G:S7=400
EE 1980 ? #2;"M240,-400":? #2;"I";"*M0,";
   S4
HC 1990 FOR Y=S4 TO 400 STEP 50:? #2;"D0,
   ";Y+5;"*M0,";Y+15;"*D0,";Y+40;"*M0,";Y
   +50:NEXT Y:REM CENTERLINE
KO 2000 ? #2;"M0,";S7;"*D";U*A(6,0);",";S
   7;"*D";U*A(4,0);",";S6;"*D";-U*A(4,0);
   ",";S6;"*D";-U*A(2,0);",";S5
DN 2010 ? #2;"D";U*A(2,0);",";S5;"*D";U*A
   (0,0);",";S4;"*D";-U*A(0,0);",";S4;"*D
   ";-U*A(2,0);",";S5
CN 2020 ? #2;"M0,";S7;"*D";-U*A(6,0);",";
   S7;"*D";-U*A(4,0);",";S6;"*M";U*A(4,0)
   ;",";S6;"*D";U*A(2,0);",";S5
UP 2030 IF I1=4 THEN 2060
QY 2040 FOR L=0 TO N/2-1:X1=U*A(0,L):X2=U
   *A(2,L+1):? #2;"M";X1;",";S4;"*D";X2;"
   ,";S5
GM 2050 NEXT L
AF 2060 FOR L=0 TO N/2-1:X1=U*A(0,L):X2=U
   *A(2,L):? #2;"M";X1;",";S4;"*D";X2;","
   ;S5
GS 2070 NEXT L
US 2080 IF I2=4 THEN 2140
XF 2090 IF I1=I2 THEN 2120
AL 2100 FOR L=0 TO N/2-1:X1=U*A(2,L):X2=U
   *A(4,L+1):? #2;"M";X1;",";S5;"*D";X2;"
   ,";S6:NEXT L
PR 2110 GOTO 2140
AM 2120 FOR L=0 TO N/2-1:X1=U*A(4,L):X2=U
   *A(2,L+1):? #2;"M";X1;",";S6;"*D";X2;"
   ,";S5
GI 2130 NEXT L
LC 2140 FOR L=0 TO N/2-1:X1=U*A(2,L):X2=U
   *A(4,L):? #2;"M";X1;",";S5;"*D";X2;","
   ;S6
DX 2150 NEXT L:IF I3=4 THEN 2210
CW 2160 IF I1=I2 THEN 2190
MG 2170 FOR L=0 TO N/2-1:X1=U*A(6,L):X2=U
   *A(4,L+1):? #2;"M";X1;",";S7;"*D";X2;"
   ,";S6
NI 2180 NEXT L:GOTO 2210
NZ 2190 FOR L=0 TO N/2-1:X1=U*A(4,L):X2=U
   *A(6,L+1):? #2;"M";X1;",";S6;"*D";X2;"
   ,";S7
GB 2200 NEXT L
VW 2210 FOR L=0 TO N/2-1:X1=U*A(4,L):X2=U
   *A(6,L):? #2;"M";X1;",";S6;"*D";X2;","
   ;S7
UN 2220 NEXT L:S8=S4-50:? #2;"M-200,";S8:
   ? #2;"PACTUAL SIZE IS ";U3;" TIMES LAR
   GER"
SW 2230 S8=S4-30:S9=LEN(G$)*6:? #2;"M";-S
   9;",";S8:? #2;"P";G$:? #2;"H":? #2;"M-
   240,";S4-50:CLOSE #2
UQ 2240 GRAPHICS 0:? "K":? "TURN OFF THE
   PLOTTER":? :? "PRESS ANY KEY TO RETURN
    TO MENU 2"
VF 2250 IF PEEK(764)<>255 THEN POKE 764,2
   55:GOTO 1160
RH 2260 GOTO 2250
NI 2270 X=6:Y=0:A$="ing as PICT":GOSUB 57
   0:X=17:A$="URE.PIC":GOSUB 570:COLOR 2:
   FOR X=0 TO 7
VB 2275 PLOT 200,X:DRAWTO 300,X:NEXT X
EE 2280 CLOSE #1:OPEN #1,8,0,"D:PICTURE.P
   IC":POKE 850,11:POKE 852,PEEK(88):POKE
    853,PEEK(89)
AV 2290 POKE 856,0:POKE 857,30:P764=USR(A
   DR("hhhXLVd"),16):PUT #1,PEEK(712):PUT
    #1,PEEK(708):PUT #1,PEEK(709)
UN 2300 PUT #1,PEEK(710):CLOSE #1:RETURN
```

game of the month

THE SEVEN SKULLS

Article on page 17

LISTING 1

Don't type the TYPO II Codes!

```
VU 1 REM THE SEVEN SKULLS
AH 2 REM BY BERNARD TAYLOR
OP 3 REM (c)1988, ANTIC PUBLISHING INC.
LB 4 GOSUB 1000:GOTO 2000
XN 5 POSITION C(R),8:? #6;"  ":MV=30
CQ 6 FOR J=1 TO 2:Q=2.8:L=15:M=12
YM 7 FOR P=1 TO 2
QC 8 FOR DE=L TO M STEP -Q:SOUND N,255,10
   ,DE:SOUND 1,248+DE/2,10,DE:POSITION 9,
   2:? #6;"  ":FOR DF=N TO 8:NEXT DF
RJ 9 POSITION 9,2:? #6;"??":SOUND 1,248+D
   E/2,10,DE:NEXT DE:L=10:M=N:Q=0.6
NO 10 NEXT P:FOR DE=N TO 200:NEXT DE:IF L
   VL=1 THEN 16
JA 11 NEXT J
VI 12 FOR J=1 TO 7:POSITION C(J+1),5:GOSU
   B I(J):POSITION C(J+1),6:GOSUB I(J)+10
   :NEXT J:TRY=2
DA 16 R=5:POSITION 9,8:? #6;"??":POSITION
   N,1:? #6;MV
ZM 18 A=STICK(0):IF STRIG(0)=N THEN 200
BO 20 IF PEEK(53279)=5 THEN 607
MB 21 IF A=15 THEN 18
DG 22 POSITION C(R),8:? #6;"  "
YQ 25 DX=(A=7)-(A=11):R=R+DX
MZ 30 IF R>8 THEN R=2
OP 32 IF R<2 THEN R=8
JU 60 POSITION C(R),8:? #6;"??":FOR DE=8
   TO N STEP -1:SOUND N,80+DE,10,DE:NEXT
   DE
UQ 70 GOTO 18
JZ 200 FOR J=1 TO 3:LOCATE C(R+D(J)),6,Z:
   POSITION C(R+D(J)),5:GOSUB Z*10:POSITI
   ON C(R+D(J)),6:GOSUB Z*10+10
BF 205 FOR DE=8 TO N STEP -1:SOUND N,140+
   DE,10,DE:NEXT DE:NEXT J:SS=N
RT 206 MV=MV-1:MV1=MV1+1:POSITION N,1:? #
   6;"  ":POSITION N,1:? #6;MV
CL 208 FOR J=N TO 18 STEP 3:LOCATE J,5,Z1
   :IF Z1=33 THEN SS=SS+1:NEXT J
YQ 215 IF SS=7 THEN LVL=LVL+1:POSITION C(
   R),8:? #6;"  ":POKE K4,N:GOTO 595
VD 216 IF MV>N THEN POKE 77,N:GOTO 20
FU 217 IF LVL=1 THEN 607
RL 218 GOTO 607
HK 360 ? #6;"&'":RETURN
JG 370 ? #6;"()":RETURN
KN 400 ? #6;"*+":RETURN
MJ 410 ? #6;",-":RETURN
OJ 440 ? #6;"./":RETURN
ZB 450 ? #6;":;":RETURN
DR 580 ? #6;"!#":RETURN
FY 590 ? #6;"$%":RETURN
EW 595 FOR J=1 TO 3:RESTORE 3200
PF 598 FOR P=1 TO 8:READ SH1,SH2,SH3,SH4
TM 600 POKE ST+SH1,SH2:POKE ST+SH3,SH4
YU 601 FOR DE=1 TO 3:NEXT DE:NEXT P:NEXT
   J
TS 602 FOR T=14 TO N STEP -1:POKE K,T:S=I
   NT(RND(0)*3)+2
SO 603 SOUND N,G(14-T)/2,10,10:SOUND 1,G(
   14-T)/S,10,8:SOUND 2,G(14-T)/S+0.6,10,
   4:FOR DE=1 TO 40:NEXT DE:NEXT T
GR 604 FOR DE=1 TO 80:NEXT DE:FOR J=N TO
   2:SOUND J,N,N,N:NEXT J:MV=30:POSITION
   18,1:? #6;LVL
SM 605 IF LVL=9 THEN 1500
QU 606 GOTO 615
DM 607 FOR J=90 TO 12 STEP -2:POKE K,J:SO
   UND N,200-J,10,12:FOR DE=N TO 10:NEXT
   DE:NEXT J:SOUND N,N,N,N
DL 608 IF TRY=1 AND LVL>3 AND INT(MV1/LVL
   )<20 THEN 5
ZH 610 RESTORE 3100:FOR J=1 TO LVL:READ A
   $:NEXT J:POSITION (20-LEN(A$))/2,3:? #
   6;A$
OQ 611 POKE DL+15,6:POKE DL+16,6:POSITION
   1,10:? #6;"PUSH START to play":POSITI
   ON 7,11:? #6;"again"
ZZ 612 IF PEEK(53279)<>6 THEN 612
BX 613 POKE 559,N
GN 614 FOR DE=N TO 50:NEXT DE:POKE DL+15,
   7:POKE DL+16,7:POSITION C(R),8:? #6;"
   ":POKE K4,N:GOTO 2195
QZ 615 FOR J=2 TO 8
EM 616 SK=INT(RND(0)*7)+1:IF E(SK)=N THEN
   616
TH 618 IF LVL>3 THEN I(J-1)=E(SK)
QK 620 POSITION C(J),5:GOSUB E(SK):POSITI
   ON C(J),6:GOSUB E(SK)+10:E(SK)=N
GZ 625 NEXT J
TJ 630 FOR P=1 TO 7:E(P)=F(P):NEXT P
RI 640 POSITION C(R),8:? #6;"  ":POKE K,1
   2:GOTO 16
KI 1000 GRAPHICS 0:POKE 752,1:POKE 559,0:
   DIM AA$(22),BB$(22):K=708:K1=709:K2=71
   0:K3=711:K4=712:N=0
NP 1002 AA$="??????????????????????":BB$=
   "??????????????????????"
HG 1005 SETCOLOR 2,N,N:POKE K,26:POKE K1,
   6:DL=PEEK(560)+256*PEEK(561):POKE DL+1
   2,7:POKE DL+13,6:L=1:M=22:P=8
WO 1007 FOR J=5 TO 1 STEP -1
TV 1008 POSITION L+8,J:? #6;AA$(L,M):POSI
   TION L+8,P:? #6;BB$(L,M)
XU 1009 L=L+2:M=M-2:P=P+1:NEXT J
DI 1010 POSITION 2,7:? #6;"THE SEVEN SKUL
   LS":POSITION 11,15:? #6;"by  Bernard T
   aylor"
LN 1012 POSITION 9,17:? "? ONE MOMENT, PL
   EASE ?":COLOR 32:PLOT 2,0:POKE 559,34
AF 1020 RETURN
AX 1500 POSITION N,1:? #6;"  ":POSITION 1
   8,1:? #6;"  ":POKE K,12:POKE K1,N
UQ 1501 POKE K3,N:POKE K4,N:B$(64,66)=STR
   $(MV1):KOL=USR(ADR(C$))
XH 1502 FOR J=1 TO 160:POSITION N,4:? #6;
   B$(J,J+19)
MM 1503 MU=INT(RND(0)*3)+2
OQ 1504 SOUND N,G(L)/2,10,8:SOUND 1,G(L)/
   MU,10,10:SOUND 2,G(L)/MU+0.6,10,4:L=L+
   1:IF L=24 THEN L=INT(RND(0)*16)
AW 1506 FOR DE=1 TO 25:NEXT DE:NEXT J
RY 1507 FOR J=N TO 2:SOUND J,N,N,N:NEXT J
   :FOR DE=N TO 100:NEXT DE:POSITION 7,3:
   ? #6;"shogun"
AB 1508 FOR J=1 TO 5
ZR 1509 FOR DE=14 TO N STEP -0.3:POKE K1,
   DE:NEXT DE
KD 1510 FOR P=5 TO 100 STEP INT(RND(0)*2.
   5)+1.5
ZG 1511 SOUND N,P,8,(80*RND(0)+50)/P:SOUN
   D 1,P+20,8,(80*RND(0)+50)/P:NEXT P
LQ 1512 SOUND N,N,N,N:SOUND 1,N,N,N
AY 1513 NEXT J:POKE K1,6:POKE K3,106:POSI
   TION 7,3:? #6;"SHOGUN":GOTO 611
YA 2000 DIM A$(20),B$(182),C$(17),C(9),D(
   3),E(7),F(7),G(24),I(7)
JQ 2050 B$="                    CONGRA
   TULATIONS     YOU DID THAT IN ONLY
   MOVES                    "
TA 2060 B$(84,129)="YOU MARRY THE LOVELY
   PRINCESS TANUKI AND WITH "
CS 2065 B$(130,182)="HER HELP YOU EVENTUA
   LLY BECOME                    "
BE 2070 C$="h?h?????????????"
JX 2100 ST=(PEEK(742)-2)*256
II 2110 FOR J=N TO 487:POKE ST+J,PEEK(573
   44+J):NEXT J:CH=16:W=8
YD 2115 FOR J=1 TO 3
TZ 2120 FOR LO=N TO CH-1:FOR BY=N TO 7:RE
   AD SH:POKE ST+(LO)*8+BY+W,SH:NEXT BY:N
```

continued on next page

```
EXT LO:IF J=1 THEN CH=7:W=208
NK 2125 IF J=2 THEN CH=2:W=472
GH 2126 NEXT J
WA 2150 FOR J=1 TO 9:READ S:C(J)=S:NEXT J
AQ 2160 FOR J=1 TO 3:READ S:D(J)=S:NEXT J:FOR J=1 TO 7:READ S:E(J)=S:F(J)=S:NEXT J
HE 2165 FOR J=N TO 24:READ M:G(J)=M:NEXT J
TN 2175 GRAPHICS 18:POKE 559,N:DL=PEEK(560)+256*PEEK(561):POKE DL+6,6
TD 2180 POKE 756,ST/256:POKE K,12:POKE K1,6:POKE K2,26:POKE K3,106
RK 2187 FOR J=2 TO 17 STEP 3:COLOR 96:PLOT J,8:NEXT J:PLOT 7,1:DRAWTO 11,1
EY 2188 POSITION 2,N:? #6;"THE SEVEN SKULLS"
CV 2189 COLOR 123:PLOT N,3:DRAWTO 3,3:PLOT 16,3:DRAWTO 19,3:COLOR 2:PLOT N,N:DRAWTO 1,N:PLOT 18,N:DRAWTO 19,N
LC 2190 PLOT N,11:DRAWTO 19,11:PLOT N,2:DRAWTO 19,2:PLOT N,9:DRAWTO 19,9
RG 2192 POSITION 3,1:? #6;"moves":POSITION 12,1:? #6;"level":COLOR 190:PLOT 9,2:COLOR 191:PLOT 10,2
MB 2195 FOR J=1 TO 7:POSITION C(J+1),5:GOSUB E(J):POSITION C(J+1),6:GOSUB E(J)+10:NEXT J
GN 2196 COLOR 32:PLOT 18,1:PLOT 4,3:DRAWTO 15,3:PLOT N,4:DRAWTO 19,4
WY 2198 COLOR 2:PLOT N,10:DRAWTO 19,10:PLOT N,11:DRAWTO 17,11:COLOR 32:PLOT 5,10:PLOT 14,10:MV=30:MV1=N:TRY=1
NT 2200 LVL=1:POSITION 18,1:? #6;LVL:COLOR 124
XG 2205 FOR J=2 TO 17 STEP 3:PLOT J,10:NEXT J
OL 2210 COLOR 32:PLOT N,7:DRAWTO 19,7:PLOT 5,10:PLOT 14,10:POKE 559,34:GOTO 6
HT 3000 DATA 15,63,127,127,243,225,201,193,126,189,255,223,253,247,189,126,240,252,254,254,207,135,147,131
OT 3005 DATA 102,62,20,7,9,14,7,0,102,124,40,224,144,112,224,0
FC 3010 DATA 0,1,3,6,50,111,107,88,240,252,62,30,15,15,31,255,88,107,111,50,6,3,1,0,255,31,15,15,30,62,252,240
NJ 3020 DATA 0,7,14,9,7,20,62,102,0,224,112,144,224,40,124,102,193,193,225,243,127,127,63,15
JS 3025 DATA 131,131,135,207,254,254,252,240
VI 3030 DATA 15,63,124,120,240,240,248,255,0,128,192,96,76,246,214,26,0,60,102,102,102,102,60,0
NR 3035 DATA 255,248,240,240,120,124,63,15,26,214,246,76,96,192,128,0
MK 3040 DATA 1,3,6,15,28,7,27,53,128,192,96,240,56,224,216,172
QQ 3045 DATA 30,7,13,27,31,27,13,7,120,224,176,216,248,216,176,224,0,60,90,126,102,66,129,255
MI 3050 DATA 255,0,255,223,126,90,60,0,255,195,165,153,153,165,195,255,18,0,3,6,9,12,15,18,0,0,-1,1
RB 3052 DATA 360,400,440,580,360,400,440
VC 3055 DATA 152,152,136,136,114,114,136,121,136,152,182,204,230,230,230,204,182,182,152,136,136,204,182,182,136
DR 3100 DATA SHARK BAIT,SLAVE,FOOD TASTER,FOOT SOLDIER,BOWMAN
MR 3150 DATA CASTLE GUARD,SAMURAI,DAIMYO
TS 3200 DATA 14,193,30,131,13,229,29,167,13,225,29,135,14,195,30,195,14,193,30,131,15,197,31,163
JU 3210 DATA 15,193,31,131,14,201,30,147
```

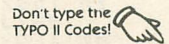
---

atari finds your best investment deal

BOND BROKER

Article on page 24

LISTING 1




```
LN 10 REM BOND BROKER
HU 20 REM BY JEFFREY A. SUMMERS
QH 30 REM (c)1988, ANTIC PUBLISHING
IV 99 GOTO 10000:REM INITIALIZATION CODE
VK 100 VECTOR=29:PTR=1
IY 101 GET #1,X:IF X<28 OR X>31 THEN 110
GH 105 VECTOR=X:RETURN
EO 110 IF X=155 THEN RETURN
TV 111 IF X=27 THEN VECTOR=27:RETURN
GH 112 IF X<>126 THEN 115
ZQ 113 IF PTR=1 THEN 101
DC 114 ? CHR$(X);:PTR=PTR-1:GOTO 101
UK 115 RESPONSE$(PTR,PTR)=CHR$(X):PTR=PTR+1:? CHR$(X);:GOTO 101
EM 1000 GRAPHICS 0:POKE 710,4:DLIST=PEEK(560)+256*PEEK(561):IF PEEK(53279)<>5 THEN POKE 16,112:POKE 53774,112
TI 1010 POKE DLIST+3,70:POKE DLIST+6,6:?"    bond             broker   "
ER 1020 POSITION 2,3:? "Name: ";INV1$:POSITION 22,3:? "Name: ";INV2$
PM 1030 POSITION 2,5:? "Load%: ";LD1:POSITION 22,5:? "Load%: ";LD2
YH 1040 POSITION 2,7:? "Rate%: ";RATE1:POSITION 22,7:? "Rate%: ";RATE2
OT 1050 POSITION 2,9:? "Reinvest: ";REIN1$:POSITION 22,9:? "Reinvest: ";REIN2$
SI 1060 POSITION 2,11:? "Load on Div.: ";LDREIN1$:POSITION 22,11:? "Load on Div.: ";LDREIN2$
IO 1070 POSITION 5,15:? "Press <esc> to display tables":POSITION 5,16:? "Use cursor keys or <RETURN> to"
RA 1080 POSITION 5,17:? "change or step through items"
KE 2001 REM NAME 1
GG 2010 POSITION 8,3:? "⊞⊞";:GOSUB 100
QK 2020 IF PTR<>1 THEN INV1$=RESPONSE$(1,PTR-1)
CC 2030 ON VECTOR-27 GOTO 6010,3010,2510,2510
QC 2040 GOTO 7010
LD 2501 REM NAME 2
AF 2510 POSITION 28,3:? "⊞⊞";:GOSUB 100
RS 2520 IF PTR<>1 THEN INV2$=RESPONSE$(1,PTR-1)
YQ 2530 ON VECTOR-27 GOTO 6510,3510,2010,2010
QM 2540 GOTO 7010
FE 3001 REM LOAD PERCENTAGE INVESTMENT 1
IE 3010 POSITION 9,5:? "⊞⊞";:GOSUB 100
AX 3020 IF PTR<>1 THEN TRAP 3030:ENTRY=VAL(RESPONSE$(1,PTR-1)):LD1=ENTRY
CJ 3030 ON VECTOR-27 GOTO 2010,4010,3510,3510
QD 3040 GOTO 7010
QR 3501 REM Load percentage investment 2
CG 3510 POSITION 29,5:? "⊞⊞";:GOSUB 100
IX 3520 IF PTR<>1 THEN TRAP 3530:ENTRY=VAL(RESPONSE$(1,PTR-1)):LD2=ENTRY
YX 3530 ON VECTOR-27 GOTO 2510,4510,3010,3010
QN 3540 GOTO 7010
UN 4001 REM RATE OF RETURN INVESTMENT 1
JN 4010 POSITION 9,7:? "⊞⊞";:GOSUB 100
FQ 4020 IF PTR<>1 THEN TRAP 4030:ENTRY=VA
```

```
   L(RESPONSE$(1,PTR-1)):RATE1=ENTRY
HG 4030 ON VECTOR-27 GOTO 3010,5010,4510,
   4510
QE 4040 GOTO 7010
WH 4501 REM RATE OF RETURN INVESTMENT 2
DR 4510 POSITION 29,7:? "⊞⊞";:GOSUB 100
NS 4520 IF PTR<>1 THEN TRAP 4530:ENTRY=VA
   L(RESPONSE$(1,PTR-1)):RATE2=ENTRY
DU 4530 ON VECTOR-27 GOTO 3510,5510,4010,
   4010
QO 4540 GOTO 7010
LY 5001 REM REINVEST DIVIDENDS?  1
ZV 5010 POSITION 12,9:? "⊞⊞";:GOSUB 100
SO 5020 IF PTR<>1 THEN REIN1$=RESPONSE$
MD 5030 ON VECTOR-27 GOTO 4010,6010,5510,
   5510
QF 5040 GOTO 7010
NN 5501 REM REINVEST DIVIDENDS?  2
BJ 5510 POSITION 32,9:? "⊞⊞";:GOSUB 100
TX 5520 IF PTR<>1 THEN REIN2$=RESPONSE$
IR 5530 ON VECTOR-27 GOTO 4510,6510,5010,
   5010
QP 5540 GOTO 7010
KD 6001 REM LOAD ON REINVESTED DIV? 1
RN 6010 POSITION 16,11:? "⊞⊞";:GOSUB 100
OR 6020 IF PTR<>1 THEN LDREIN1$=RESPONSE$
RF 6030 ON VECTOR-27 GOTO 5010,2510,6510,
   6510
QG 6040 GOTO 7010
LV 6501 REM LOAD ON REINVESTED DIV? 2
TB 6510 POSITION 36,11:? "⊞⊞";:GOSUB 100
QC 6520 IF PTR<>1 THEN LDREIN2$=RESPONSE$
HZ 6530 ON VECTOR-27 GOTO 5510,2510,6010,
   6010
PE 7001 REM SECOND SCREEN
DD 7010 GRAPHICS 0:POKE 710,4:? INV1$:POS
   ITION 22,0:? INV2$:V1=1-(LD1/100):V2=1
   -(LD2/100)
NP 7020 FOR YEAR=1 TO 20:? YEAR:POSITION
   5,YEAR
MU 7025 IF REIN1$<>"Y" AND REIN1$<>"y" TH
   EN V1=V1+RATE1/100:GOTO 7035
UY 7030 V1=V1+V1*(RATE1/100)*(1-LD1*(LDRE
   IN1$="Y" OR LDREIN1$="y")/100)
MG 7035 IF REIN2$<>"Y" AND REIN2$<>"y" TH
   EN V2=V2+RATE2/100:GOTO 7050
BZ 7040 V2=V2+V2*(RATE2/100)*(1-LD2*(LDRE
   IN2$="Y" OR LDREIN2$="y")/100)
SM 7050 ? (V1-1)*100:POSITION 22,YEAR:? (
   V2-1)*100
QU 7060 NEXT YEAR
HE 7070 ? :? "    <esc> to return to data
   entry":POKE 752,1
PI 7080 ? "     <*> to end program";
BC 7090 GET #1,X:IF X=27 THEN POKE 752,0:
   GOTO 1000
HM 7100 IF X=42 THEN GRAPHICS 0:END
UA 7110 GOTO 7090
KD 10000 DIM INV1$(15),INV2$(15),RESPONSE
   $(15),REIN1$(1),REIN2$(1),LDREIN1$(1),
   LDREIN2$(1)
AG 10010 CLOSE #1:OPEN #1,12,0,"K:"
ZA 10020 REM DEFAULT VALUES
MV 10030 INV1$=" ":INV2$=" "
ZA 10040 LD1=0:LD2=0
NC 10050 RATE1=7:RATE2=7
MU 10060 REIN1$="Y":REIN2$="Y"
GB 10070 LDREIN1$="N":LDREIN2$="N"
VR 10999 GOTO 1000:REM START MAIN BODY
```

lighting-fast command finder

ACTION! TOOLBOX

Article on page 52

LISTING 1

```
; ACTION! TOOLBOX
; BY KEVIN SHERRATT
; (c)1988, ANTIC PUBLISHING

MODULE
 BYTE Index,
      Match
 BYTE ARRAY String,
            Word,
            Comlist

PROC Wordfind()
 BYTE Start,
      Counter
 FOR Counter=Index TO String(0)
 DO
  IF String(Index)<>32 THEN
   EXIT
  FI
  Index==+1

 OD
 Start=Index
 FOR Counter=Index TO String(0)
 DO
  IF String(Index)=32 THEN
   EXIT
  FI
  Index==+1
 OD
 ScopyS(Word,String,Start,Index)
RETURN

PROC Matchup(BYTE ARRAY Command, List BY
TE Increment)
 BYTE Counter1,
      Counter2
 Match=0
 FOR Counter1=1 TO List(0) STEP Increment
 DO
  IF Command(1)=List(Counter1) THEN
   Match=1
   FOR Counter2=2 TO Increment
   DO
    IF List(Counter1+Counter2-1)=32 THEN
     EXIT
    ELSEIF Command(Counter2)<>List(Counter1+Co
unter2-1) THEN
     Match=0:EXIT
    FI
   OD
  FI
  IF Match=1 THEN
   EXIT
  FI
 OD
 IF Match=1 THEN
  Match=Counter1
 FI
RETURN

PROC Caller()
 Comlist="DOG CAT COW MULE"
 Print("TYPE ONE OF THE FOLLOWING: "
 PrintE(Comlist)
 InputS(String)
 Index=1
 Wordfind()
 Matchup(Word, Comlist, 4)
 PrintE(Word)
 PrintBE(Match)
RETURN
```

Antic Classifieds

SOFTWARE, ETC.

Best DP disks/prices—fastest service—FREE bonuses—8-bit/ST. Automatic DISK-A-MONTH program. Full disks less than $1.50 each. Super sample disk with catalog $3.50. Specify computer. PATNOR, POB 370782, El Paso, TX 79937.(10/88)



PRINTSHOP ICONS for the ATARI 800/XL/XE. 13 volumes with over 1300 pictures for use with Printshop. Order today! This is a time limited special for only $20.00. ComputerActive, Box 893-A, Clinton, OK 73601.(10/88)

Try us for your Atari Public Domain software needs. Good prices, fast service, Write for free catalog. Vulcan Software PO Box 692 Manassas, VA 22111-0692. (1/89)

1-ST PUBLIC DOMAIN SOFTWARE
Library containing over 100 Public Domain programs, Art, Demos, Games, Music, Utilities. At amazing low cost and FREE air mail postage anywhere in the world. Send now for large free catalogue. To:StockSoft, 15 Woodbrooke Rd.,Birmingham B30 1UE, England UK. (10/88)

COMPREHENSIVE COMIC BOOK SYSTEM! ATARI 8-bits, 48-K, disk drive. Excellent manual! $19.95. SASE->More infor. BUECO, 3900 Hampton Dr., Anchorage, AK 99504. (11/88)

1-FREE 8-BIT PD DISK
For your free disk send $1.00 shipping & handling to: ComputerActive, Box 853-A, Cljinton, OK 73601.(10/88)

Educators! Low-cost shareware software for ST mon/color. $4.00 per disk! SASE for full catalog. ST-Land PDware, Box 1646, Orange Park, FL 32067-1646.(10/88)

SPHERE of INTERNMENT—Largescale adventure with many castles, villages, dungeons, etc., to explore. With map $25 postpaid. 25 new double-sided, double-density disks, $15 postpaid. Utilities and other programs available for Atari 8-bit (Specify type). VISA/MasterCard accepted. F.H.S., Rt. 1, Karlstad, MN 56732. Ph. (218) 436-2835. (10/88)

AMAZING ATARI 8-BIT SOFTWARE!!!
Choose from over 240 Public Domain Theme Disks or pick individual programs. Free 55-page Catalog! BELLCOM, Box 1043-A, Peterborough, Ontario, Canada K9J 7A5.(11/88)

FEAR CHALLENGES THE 8-BIT WORLD!! Unbelievable Action!! Figure Eight Auto Racing 400/800/XL/XE 48KRAM $7.50/Disk/PPD. RASCOM, 22128 Newkirk Avenue, Carson, CA 90745. (11/88)

New NERDS graphics collections for Print Shop(R): BIOLOGY 1&2: Animal, Plant, Micro, more—230 pics: $15 both. Periodic Table: Chemistry symbols (over 100): $9. MAPS 1&2: US, Europe, more—230 pics: $15 Both. Add $1 P&H SASE for printouts. NERDS, Loeffler, 18 Wendy Dr., Farmingville, NY 11738. (11/88)

Discount Software/Hardware for ATARI 8-bit & ST. 30% below retail. ATARI 130XE $145, ATARI-ST color $969 ATARI XF551 disk drive $185, Anchor 2400 baud modem $159, Star NX-1000 printer $189, Star color $259. Send $1 for 20 page catalog with over 500 titles. Specify computer MULTI VIDEO SERVICES, Box 246 E. Amherst, 14051. Phone: (716) 688-0469 after 6pm. (10/88)



Stop overpaying for PD software!!! All 8-bit disks only $2.00 each, ST only $3.00. Quantity discounts, great selection. Specify computer. Send large SASE: MWPDS, 890 N. Huntington St., Medina, OH 44256.(10/88)

MANGHAM'S ATARI 8-bit. PD Great selection SASE, two stamps for catalog, PO Box 1351, Forest Park, GA 30050.(10/88)



PUBLIC DOMAIN SOFTWARE only $2.50 a disk. Over 200 disks for the 800/XL/XE. Fast service and unbelievable discounts. Free list. ComputerActive, Box 893-A, Clinton, OK 73601.(10/88)

Check Poker, the Real Advantage and much more. Instructions on how to make program personal. Ernest Del Rio, Box 96, Anatone, WA 99401—Disk $5.00+$1.50 S&H.(10/88)

Original Rambrandt Artwork and display program. Rambrandt not required! Send $8.00 to Anthony Watson, 2205 Simpson, Vancouver, WA 98660.(10/88).

ATARI 800/XL/XE PUBLIC DOMAIN DISKS
Receive four high quality double-sided disks for only $8.50! Send money order for 24 hour shipping. Free list. 1ST Byte. PO Box 130822, Tyler, TX 75713.(12/88)

ATARI ST DISKS. $4.00 each, 20+ programs per disk. Send $4.00 for sample disk and huge catalog. L. Christoffer, 1806 Patrick Dr., Burlington, WA 98233.(11/88)

For the Atari ST, THE INVENTORY MANAGER is a sophisticated report and order generating inventory control program, written in FORTH by a person with 23 years in inventory control management. Write for FREE brochure to: Walter La Foret, PO Box 166, Fountainville, PA 18923.(10/88)

★★★★★★

NEW! AUTOPREP DISK INITIALIZER
Ends repeated DOS prompts, saves time. Automatically formats single or dual density, writes your choice of DOS files, RAMDISK.COM and/or AUTORUN.SYS—all without DOS. Specify once, then initialize 10 or 10,000 disks with no more prompts. Fast, accurate for Atari 8-bits, min. 32K, DOS 2.0 or 2.5. Only 14.95+$2 shipping, check or M.O. (New Yorkers add $1.05 sales tax.) HELPWAYS, Box H, Rochester, NY 14623.(12/88)

AGAPE GAMES-5 CHRISTIAN GAMES
KINGS GLORY Arcade like Adventure with 26 mazes and a maze maker. BIBLE WORD SEARCHER with 30 puzzles and a puzzle generator. Plus 3 Games that teach the Books of the Bible. For Atari 8-bit (requires 48K+disk) $12.95-Daniel Sharpe, GPO 911, Chicopee, MA 01021.(10/88)

XL/XE PD CLASSICS Games, productivity, utilities, communications, more. Quality Programs Only! Catalog free. HOMEMADE, 6011 Hyde Park Circle, Suite 208, Jacksonville, FL 32210.(10/88)

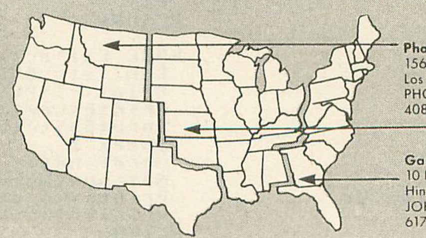
USER'S GROUP

GFA BASIC USERS GROUP. Worldwide membership, monthly newsletter with programming tips. Details: Send large SASE. RASCOM, 22128 Newkirk Ave., Carson, CA 90745.(10/88)

Advertising Sales

Advertising Sales Director
John Taggart
Antic Magazine
544 Second Street
San Francisco, CA 94107
(415) 957-0886

Address all advertising materials to:
KATE MURPHY
Advertising Production Coordinator
Antic Magazine
544 Second Street
San Francisco, CA 94107



Phoebe Thompson Associates
15640 Gardenia Way
Los Gatos, CA 95030
PHOEBE THOMPSON
408-356-4994

Garland Associates
10 Industrial Park Rd.
Hingham, MA 02043
JOHN A GARLAND
617-749-5852

The Pattis Group
4761 W. Touhy Ave.
Lincolnwood, IL 60646
MICHAEL MOONEY
312-679-1100

Advertisers Index

Be sure to mention ANTIC when contacting these advertisers—all of whom support the Atari 8 bit and ST computer.
This list is provided as a courtesy to our advertisers. ANTIC does not guarantee accuracy or comprehensiveness.

Advertising Deadlines

December 1988

Insertion Orders: September 1
Artwork: September 9
On Sale: Last week of October

January 1989

Insertion Orders: October 3
Artwork: October 10
On Sale: Last week of November

February 1989

Insertion Orders: November 2
Artwork: November 9
On Sale: Last week of December

Tech Tips

By CARL EVANS

USEFUL POKE & PEEK LOCATIONS : PART I

18,19,20	Clock; address 20 increments 60 times a second; 19 increments each time location 20 is reset (about once every 4.25 seconds); 18 increments each time location 19 is reset (about once every 18 minutes)
65	POKE a zero here to stop normal program loading sounds (beeping)
77	POKE a zero here to turn off the attract-mode; must repeat every seven to nine minutes
82	Screen left margin (default=2)
83	Screen right margin (default=39)
84	Current cursor row (Graphics 0)
85,86	Current cursor column for all modes (ranges from 0 to 319)
88,89	Upper left-hand screen corner address
93	Code for the character under the cursor
128,129	BASIC's LOMEM pointer
130,131	Contains location of the Variable Name Table
132,133	Points to the end of the Variable Name Table plus one byte
134,135	Contains location of the Variable Value Table
136,137	Points to the beginning of a BASIC program
140,141	Contains location of the String and Array Table; also the end of a BASIC program
144,145	BASIC's top of memory pointer
186,187	The line number where a BASIC program has stopped due to ERROR, TRAP, STOP or BREAK
195	The OS code for an error during execution is stored here
212,213	Used to return a value from a USR call
560,561	Contains the location of the display list
580	POKE a 1 here to cause a reboot when [RESET] is pressed
624	Contains current value of PADDLE0 (0-228)
625	PADDLE1
626	PADDLE2
627	PADDLE3
628	PADDLE4
629	PADDLE5
630	PADDLE6
631	PADDLE7
632	Contains current value of STICK0
633	STICK1
634	STICK2
635	STICK3
636	PTRIG0: contains 0 if PADDLE0 trigger is pressed; otherwise contains 1
637	PTRIG1
638	PTRIG2
639	PTRIG3
640	PTRIG4
641	PTRIG5
642	PTRIG6
643	PTRIG7
644	STRIG0: contains 0 if STICK0 trigger is pressed; otherwise contains 1
645	STRIG1
646	STRIG2
647	STRIG3
660,661	Contains address of upper left corner of text window
694	Inverse video flag: 0=normal, 128=inverse
702	Caps-lock flag: 0=lowercase, 64=uppercase, 128=control characters
708	COLOR0: used for the color of uppercase characters in Graphics 1 and 2 (default is 40)
709	COLOR1: used for the color of lowercase characters in Graphics 1 and 2 (default is 202)
710	COLOR2: used for the color of inverse uppercase in Graphics 1 and 2; used for background in Graphics 0 (default is 148)
711	COLOR3: used for the color of inverse lowercase in Graphics 1 and 2 (default is 70)
712	COLOR4: used for the color of the background (border) in Graphics 0 (default is 0)
736,737	Used by DOS to hold the RUN address of a binary load file
738,739	Immediate execution address used by DOS to hold the INIT address of a binary load file
741,742	MEMTOP for BASIC and the OS (minus 1 to get highest free memory)
743,744	MEMLO points to the bottom of user memory for BASIC programs

continued next month

__Antic__ pays $25 for every original and exclusive Tech Tip submission that we publish. Send your 8-bit or ST disk and printout to: Antic Tech Tips, 544 Second Street, San Francisco, CA 94107. Tech Tips welcomes very short programs that demonstrate the Atari's powers, simple hardware modifications, or useful macros for popular software.

THE INCREDIBLE BACK ISSUE SALE!

ANTIC Back Issues

HOW TO ORDER

Ordering individual magazines or disks is easy! AMS stands for Antic Magazine. ADS stands for Antic Disk. Follow these product codes with the month and year you want. For example, to order the March 1987 disk and magazine, write:

AMS0387 For Antic Magazine March 1987	ADS0387 For Antic Magazine March 1987

WHAT IS AVAILABLE

Individual back issue disks and magazines are available for July 1983 through the current issue. September 1984 magazine is sold out.

Individual Antic disks are $5.95 each, Antic magazines are $4.00 each. Remember to include shipping and handling charges (see below)

6 month back packs only $20.00 each

Get a complete set—order both magazines and disks in our special BACK PACK SALE

DISKS

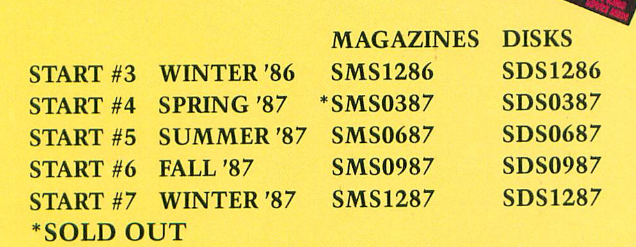
JULY THRU DECEMBER 1983 DBP8302	JULY THRU DECEMBER 1985 DBP8502
JANUARY THRU JUNE 1984 DBP8401	JANUARY THRU JUNE 1986 DBP8601
JULY THRU DECEMBER 1984 DBP8402	JULY THRU DECEMBER 1986 DBP8602
JANUARY THRU JUNE 1985 DBP8501	JANUARY THRU JUNE 1987 DBP8701

MAGAZINES

JULY THRU DECEMBER 1983 MBP8302	JULY THRU DECEMBER 1985 MBP8502
JANUARY THRU JUNE 1984 MBP8401	JANUARY THRU JUNE 1986 MBP8601
JULY THRU DECMEBER 1984 MBP8402	JULY THRU DECEMBER 1986 MBP8602
JANUARY THRU JUNE 1985 MBP8501	JANUARY THRU JUNE 1987 MBP8701

Available only in six month sets shown above.

START Back Issues



		MAGAZINES	DISKS
START #3	WINTER '86	SMS1286	SDS1286
START #4	SPRING '87	*SMS0387	SDS0387
START #5	SUMMER '87	SMS0687	SDS0687
START #6	FALL '87	SMS0987	SDS0987
START #7	WINTER '87	SMS1287	SDS1287

*SOLD OUT

Start magazines are $4.00 each. Start disks are $10.95 each. Remember to include shipping and handling charges (see below)

SHIPPING AND HANDLING INFORMATION

Please include $1.00 for each magazine ordered
Please include $3.00 for 1-10 disks
$6.00 for 10 or more disks

ST RESOURCE PROGRAMS (From Antic)

	ISSUE	DISK #
COMPENDIUM #1	8/85-1/86	SB0101
COMPENDIUM #2	2/86-5/86	SB0102
COMPENDIUM #3	6/86-9/86	SB0103
COMPENDIUM #4	10/86-2/87	SB0106
COMPENDIUM #5	3/87-7/87	SB0107

Compendium disks are $10.95 each.

VISA AND MASTERCARD HOLDERS

CALL TOLL FREE 800-234-7001

OR SEND YOUR CHECK OR MONEY ORDER TO
ANTIC PUBLISHING
BACK ISSUES
544 SECOND STREET
SAN FRANCISCO, CA 94107

Please indicate by product code which issues you would like. California residents add 6½% sales tax.

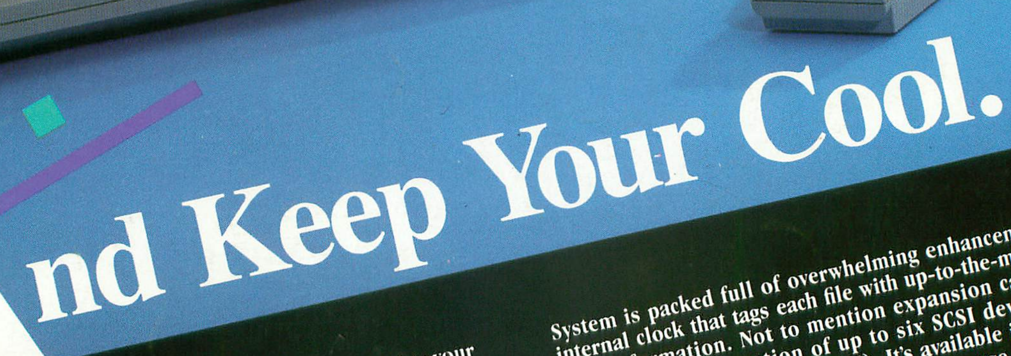
Refresh Your Memory



And Keep Your Cool.

Introducing the ST Hard Drive System from ICD that refreshes your memory better than any other ST hard drive around. *No problem.*

It's the drive that not only looks cool, but stays cool too. All because of a built-in fan that knows exactly how to beat the heat and maintain a calm, cool and collected environment . . . even in *your* most heated situations. *No sweat.*



And, it's the hard drive that takes a refreshing approach to aesthetic case design as well. See for yourself. It's easy on the space, fitting perfectly under the monitor. And it's easy on the eyes, tailored to look great in the company of your Atari ST. With adjustable front legs, your monitor gets the lift it needs for comfortable viewing. *No strain.*

Despite a sleek and compact exterior, the ICD ST Hard Drive System is packed full of overwhelming enhancements. Like an internal clock that tags each file with up-to-the-minute time and date information. Not to mention expansion capabilities that welcome the connection of up to six SCSI devices and daisy-chaining Atari's DMA Bus (ACSI). It's available in more memory capacities than you can imagine. With storage ranging from 20 megabyte systems up to 280 megabytes. And, there's dual drives too, that double your protection and double your confidence. *No stress.*

So, the next time you think about a hard drive for your Atari ST, think about the countless ways we can refresh your memory. It's the only drive worth remembering. Because it's from ICD. *No wonder.*

For further product information, please call or write for our catalog today.

ICD

1220 Rock Street
Rockford, IL 61101-1437
(815)968-2228
MODEM: (815)968-2229
FAX: (815)968-6888